The Newspaper of Information Systems Management
December 4, 1995, Vol. 29, No. 49, 196 Pages, $6/Copy, $48/Year

COMPUTERWORLD

TOP 25 TECHNO MBAs

LOOKING FOR A TOP-NOTCH MANAGER FOR YOUR IS OPERATION? Then hire a Techno MBA. *Computerworld* **surveyed 300 corporate recruiters and 100 business school deans for our first-ever ranking of the best Techno MBA schools. But be warned, these candidates come with a hefty price tag: Top-ranked MIT grads can command nearly $90,000 starting pay. See the special report in Computer Careers, page 121.**

Microsoft, Sun face off in Internet ring

Desktop giant to unveil 'net strategy

By Stuart J. Johnston and Kim S. Nash

Microsoft Corp. will stage a glitzy dog and pony show this week to show how it is ready to storm the Internet with a slew of new and enhanced products.

But users, analysts and industry observers last week agreed that competitors have no immediate reason to fear Microsoft's on-line might.

"If I were a Microsoft competitor, I wouldn't be afraid of the Big Bad Wolf because I don't think all the pieces are there for them to dominate the Internet yet," said Chris DeVoney, an author of books on Windows and a syndicated technology columnist in Seattle.

The Achilles' heel for Microsoft is the company's reluctance to support Sun Microsystems, Inc.'s Java Internet programming language. Although licenses

Microsoft, *page 145*

Netscape, Sun race to deliver object punch

By Kim S. Nash and Stuart J. Johnston

Battle lines will be drawn thick and dark today when Netscape Communications Corp. and Sun Microsystems, Inc. reveal plans to lock arms and take on Microsoft Corp. over an object standard for the Internet.

Sun and Netscape will announce Java Script, a lightweight programming language for building World Wide Web applications, officials from both companies confirmed last week.

Java, which fathered Java Script, is Sun's object-oriented programming language. It was designed to build animated Web "applets," or miniature applications that can run inside other programs.

Java Script was created because Java itself "isn't the easiest thing to program in," said Larry Weber, vice president of the de-

Java, *page 145*

Fraud charge stings SSA

Client/server vendor bites back, sues customer

By Julia King

System Software Associates, Inc. is on the hot seat, with a prominent user suing the manufacturing software vendor on charges of fraud and deceptive business practices.

It may take years to resolve the lawsuit, in which $3.7 billion packaging giant Owens-Illinois, Inc. charges SSA with misrepresenting the capabilities of its client/server software.

Also at issue in the suit, filed Nov. 20 in federal circuit court in Chicago, is the vendor's alleged failure to deliver on other promises that Owens-Illinois claims SSA made. These include delivery of a Unix version of SSA's manufacturing package — Business Process Control System — to run on Sybase, Inc. databases.

SSA last week denied the charges and said the litigation has "no bearing" on the functionality of its Unix-based products. The Chicago-based vendor has filed a countersuit against Owens-Illinois for breach of contract.

SSA Chief Executive Officer Roger Covey said such litigation was highly unusual.

"In 14 years, this is the first time we [have] sued for breach of contract, and in 14 years, this is only the second suit against us," Covey said.

But four days after Owens-Illinois brought its suit, a class action suit was brought against SSA in federal court in Chicago. It charges the vendor with violations of securities laws, which Covey also denied last week.

Meanwhile, neither SSA nor Owens-Illinois is sitting around waiting for a verdict.

Owens-Illinois in Toledo, Ohio, has signed a multimillion-dollar contract with Dun & Bradstreet Software to install its new SmartStream distributed client/server applications (see story, page 2).

And SSA executives, who

Lawsuit, *page 145*

Visions of holiday $ugarplums

Retail IS marks up success

By Thomas Hoffman and Mitch Wagner

Retail IS professionals are keeping as busy as Santa's elves this holiday season, using target-marketing techniques and decision-support systems to bolster sluggish yuletide sales.

To avoid finding coal in their stockings, many retailers are tapping their information systems departments to provide key information on their most frequent customers and biggest spenders during the busy holiday sales push.

One company using computer technology to track customer demand is Barneys New York.

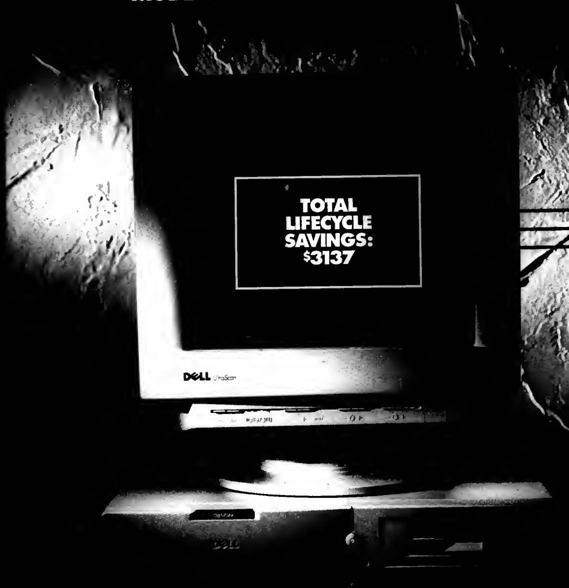
"Because we can capture the customer's history, we can do a lot of analysis and target mailers for customers in specific areas," said Jules D. Cohn, MIS director for the upscale fashion apparel store.

Jules D. Cohn, *Barneys' MIS director, says target marketing helps the retailer reach its sales goals*

The chain, with 20 shops throughout the U.S., captures customer information on Fujitsu-ICL Systems, Inc. Atrium9000 point-of-sale terminals every time a customer makes a pur-

Retailers, *page 147*

INTRODUCING DELL'S DESKTOP LIFECYCLE COST REDUCTION MODEL.



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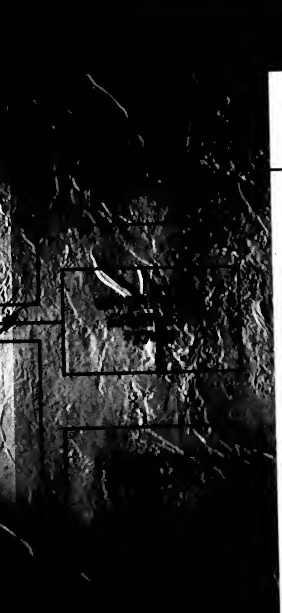

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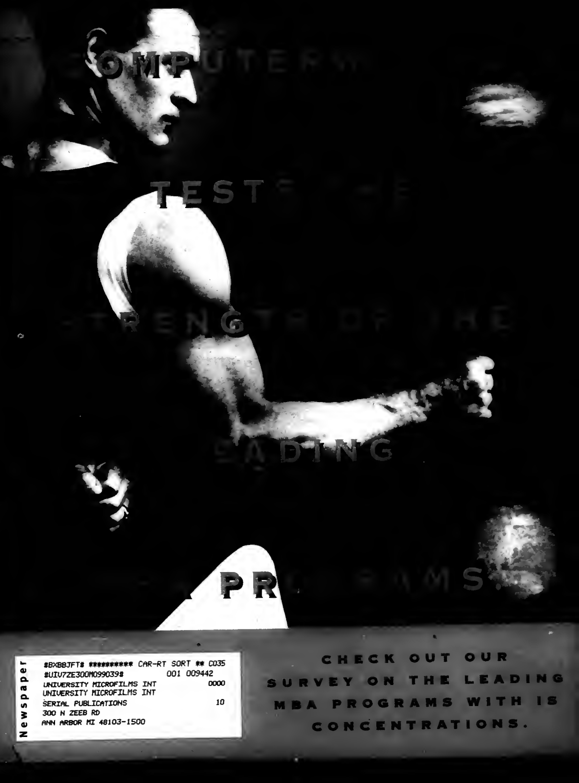

CHECK OUT OUR SURVEY ON THE LEADING MBA PROGRAMS WITH IS CONCENTRATIONS.

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Inside Computerworld

Dec. 4, 1995

Choice Cuts

"The great vogue *of the 1990s seems to be becoming lean and mean. Am I the only one who thinks this is dumb?" Q&A with development guru Tom DeMarco.*
In Depth, page 108

STELLA JOHNSON

Closer Look
VISUAL DEVELOPMENT TOOLS

A Closer Look *at visual development tools reveals they require a whole new bag of tricks.*
Application Development, page 85

Toy Story: *Hollywood graphics come into their own, and Paul Gillin argues this visual advance will have a tangible impact on interfaces.*
Workgroup Computing, page 53 and Editorial, page 36

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Dun & Bradstreet rolls out enterprise client/server software that lets users distribute applications and data across many locations.

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Ralph Ungermann's First Virtual Corp. will unveil products that support desktop multimedia.

4 Foreign programmers
As the Senate begins work on immigration reform, displaced programmers call for limits on foreign replacements.

4 Network management
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It's time for IS to get tough about users' backdoor computer purchases.

Etc.

D&B's SmartStream jabs SAP AG

Client/server apps offer improved database functionality

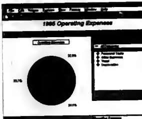
By Julia King

Dun & Bradstreet Software next week will deliver on its promise to provide truly distributed client/server computing. The move launches a powerful arrow directly at the Achilles' heel of market giant SAP AG.

D&B Software's new SmartStream DE applications let users cut the cord on a single centralized database such as the kind employed in SAP's R/3 software.

Instead — thanks to a completely revamped and highly flexible architecture — SmartStream users can set up multiple databases at various sites and replicate data across them.

"What this does is allow businesses to distribute functionality among financial organizations; factories and warehouses," said Barry Wilderman, an analyst at Meta Group, Inc. in Stamford, Conn.



D&B Software's SmartStream DE applications *let users cut the cord on a single centralized database*

"We're still very much in the early days of this kind of functionality, but it is definitely where all of the vendors are headed," he said.

SAP, for example, also is trying to move to a distributed architecture with its Application Link Enabling (ALE) technology. ALE message-oriented middleware resides on top of R/3 applications and lets them exchange data.

Analysts said SmartStream's new distributed functionality surpasses what SAP has accomplished so far and gives D&B Software a leg up in the market — at least for now

Added features

Other notable new features in SmartStream DE include the following:

- A distributed workflow capability that lets users configure new business processes on the fly and launch third-party applications from within SmartStream.
- Integrated production scheduling and shop-floor functions via connections to software from Berclain Group in Schaumburg, Ill., and Industrial Computer Corp. in Atlanta.
- Enhanced decision-support and reporting tools.
- An automated mainframe-to-client/server mapping capability that speeds the conversion processes to a client/server format.

Dun & Bradstreet Software
Atlanta

Products: Millennium, a host-based financial package, and SmartStream, a suite of client/server enterprise applications

Number of SmartStream customers worldwide: 500

1995 revenue from all software: $350 million

SmartStream DE includes a range of software financials and human resources, manufacturing and distribution applications. It runs on Sybase, Inc.'s database.

Pricing for a 25-user license for the financial software starts at about $200,000.

Advantage D&B

What clearly places the applications out in front of other vendors' client/server packages is the distributed architecture, analysts said.

This architecture relies heavily on server-to-server messaging capabilities and Sybase's Replication Server technology, analysts said.

Distributed functionality is becoming increasingly critical as companies continue to decentralize and, in the process, geographically scatter workers in need of business information.

All operations and data are segmented along product lines at Owens-Illinois Corp., a $3.7 billion Cleveland-based plastics and packaging manufacturer with 56 plants.

Using SmartStream's distributed applications and data, "our idea is to aggregate and disaggregate inventory information" so users can view inventory on a plant-wide, division or corporate basis, said John Dawson, director of manufacturing resource planning.

Owens-Illinois will use the complete SmartStream suite throughout the corporation. The company will implement the software in phases during the next several years.

Dawson said SmartStream's integrated shop-floor control functions and workflow capabilities figured strongly into Owens-Illinois' decision, which followed a two-month proof of concept on the software.

AT&T/Novell service: One call does it all

By Neal Weinberg
and Laura DiDio

Think of it as your own private Internet.

A new service announced last week by AT&T Corp. and Novell, Inc. will let users simultaneously access LAN-based applications, CompuServe, the Internet and eventually AT&T's Network Notes, with a single telephone call from home or office.

AT&T's NetWare Connect Service (ANCS) combines AT&T's wide-area telecommunications with Novell's NetWare Directory Services (NDS) to create a secure, private network that combines many types of networks.

A whole new world

Users of leased-line services incur monthly fees and mileage charges. ANCS charges will be based on usage only, AT&T and Novell executives said at last week's briefing.

"For users, ANCS will help eliminate boundaries between today's local, wide-area, consumer and Internet networks to gain much greater and easier access to global information," said Rich Edwards, a senior analyst at Robertson Stephens Co., an investment firm in San Francisco.

Ken Thygeson, managing director of technology infrastructure at McGladrey & Pullen, an accounting firm in Minneapolis, said, "We had 60 LANs that didn't really communicate other than through [electronic mail]."

He uses ANCS to connect those LANs and move data located at multiple sites across the network via a frame-relay connection.

Accountants who typically do much of their work at a client's site can dial in from the road and gain "access to everything wherever they are," Thygeson said. They can finish a job in one visit instead of having to return to the office to look up information, he said.

Secure, too

ANCS also "provides a secure environment for sharing information between companies," said Beth Gage, an analyst at TeleChoice, Inc., a consultancy in Verona, N.J. For example, a manufacturer could put parts information onto the network where distributors could access it.

"The implication of this thing in the insurance industry is staggering," said Frank Weinrauch, vice president of sales and marketing at InsurQuote Systems, Inc. in Provo, Utah.

For example, InsurQuote is developing software to link insurance companies, independent agents and consumers but has been stymied by the lack of a network platform.

The company is using ANCS to create a nationwide network that gives an independent agent dial-in access to billing and policy records held by insurance companies.

"That's a world away from where we are today," Weinrauch said. Similar information currently is exchanged on paper or floppy disks, he said.

Longtime NetWare user Jeff Drumm, manager of microcomputer systems at Maine Medical Center in Portland, said, "ANCS could solve some of our [wide-area network] communications problems and might lower our costs."

What it'll cost you

DIAL-UP:

$4.25 per hour for dial-up connection to a local telephone number
$6 per hour for dial-up connection to a single nationwide access number

DEDICATED FRAME-RELAY CONNECTION:

$300 to $5,000 per month depending on port speed and committed information rate

More than meets the eye

Strategically, there is more behind Novell's foray into the world of the private Internet via the ANCS gateway than first meets the eye, analysts said.

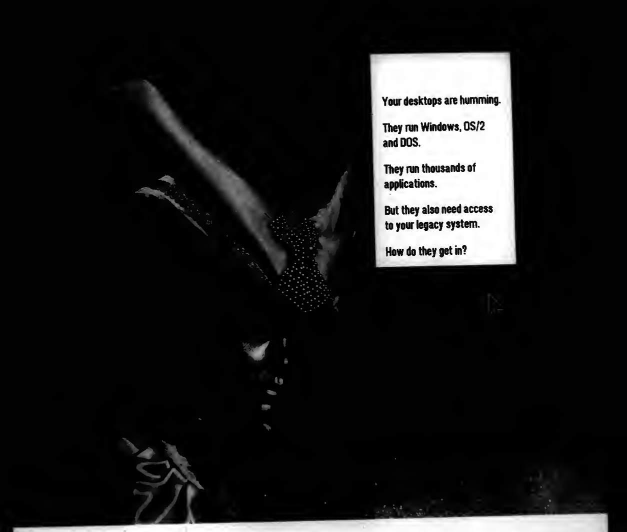
The ANCS private Internet gateway and the Nested NetWare initiative will let Novell co-exist with rival Microsoft Corp.

"The best way to combat a larger, more powerful opponent is to flank them or, in Novell's case, move into turf that they aren't playing on," said Rich Edwards, senior analyst at Robertson Stephens Co.

For example, Novell's current strengths in NDS, ANCS and Nested NetWare are all areas in which Microsoft has no equivalent product offerings.

Microsoft hasn't announced any plans to compete with the ANCS or services from other telecommunications carriers and the regional Bell operating companies.

— Laura DiDio


Your desktops are humming.
They run Windows, OS/2 and DOS.
They run thousands of applications.
But they also need access to your legacy system.
How do they get in?

Programmers to Senate: 'Preserve American dream'

Work begins on immigration bill that could save citizens' jobs

By Mitch Betts
WASHINGTON

As a U.S. Senate committee began work on immigration reform legislation last week, a group of computer professionals made an emotional appeal to restrict the number of foreign programmers who can work in the U.S.

"The American dream … has turned into the American nightmare," said Julie Cairns-Rubin, who was a programmer at Sea-Land Service, Inc.'s information systems unit in Edison, N.J., for 11 years before she and her colleagues were replaced by low-cost foreign programmers.

A similar story was told by Linda Kilcrease, a former programmer at American International Group, Inc. (AIG), an insurance company that replaced 250 IS employees with foreign workers. "Adding insult to injury, displaced employees were forced to train their replacements in the computer systems they had built and successfully run for years," she said.

The ex-employees spoke at a press conference called by the IEEE U.S. Activities Board, which supports the Senate immigration bill sponsored by Sen. Alan K. Simpson (R-Wyo.). The bill lowers the ceiling on employment-based immigrant admissions from 140,000 to 90,000 per year.

In a statement from New York, AIG officials said it was more cost-effective to outsource its software maintenance work because the staffing needs are variable.

Clint Eisenhauer, spokesman for Charlotte, N.C.-based Sea-Land, confirmed that the big shipping company dismissed almost 100 IS employees this year and transferred the work to offshore programming shops in India and the Philippines. During the transition, foreign programmers came to the U.S. for training under "guest worker" visas

Same quality overseas

Eisenhauer said the hard decision was made because "we could get the same quality of programmers and product at a better economic rate. We wish … we could use American labor in every regard worldwide, but that simply is impossible if we are to remain competitive."

Foreign programmers are paid about one-third less than U.S. programmers, said Lawrence Richards, executive director of the Software Professionals' Political Action Committee in Austin, Texas. Richards is a former IBM programmer who resigned to organize the group.

"I was stunned to learn that under current law, firing American workers and replacing them with lower-paid 'guest workers' is perfectly legal," he said.

Richards said concern about a "skills shortage" led Congress in 1990 to open the door to more high-tech immigration, but the shortage never materialized.

The business community — including vendors such as Microsoft Corp., Sun Microsystems, Inc. and Intel Corp. — is opposed to restrictions on high-tech immigration.

"It appears the provisions of the Simpson bill are based on emotion, not facts," said Harris N. Miller, president of the Information Technology Association of America based in Arlington, Va. "Skilled foreign workers are needed to penetrate foreign markets, to fill vacancies in certain highly skilled positions and to deal with periodic labor shortages."

He added that help wanted ads for IS jobs appear to be at an all-time high.

For more information . . .

World Wide Web addresses for high-tech immigration information

Status of immigration legislation
http://www.itaa.org/pubpol.htm

Software Professionals' Political Action Committee
Austin, Texas
http://www.aea.org/softpac

Information Technology Association of America
Arlington, Va.
http://www.itaa.org

"Siskind's Immigration Bulletin" newsletter
http://www.nashville.net/~gsiskind

Visual development tools get a Closer Look. See page 85.

Sooner than expected

Desktop multimedia package to ship now

By Bob Wallace and Laura DiDio

Ralph Ungermann's First Virtual Corp. (FVC) start-up this week is expected to unveil a series of products designed to support multimedia applications at the desktop sooner than thought possible, *Computerworld* has learned.

Multimedia

Using a PC and FVC's First-Family of multimedia networking products, users will be able to participate in a desktop videoconference, share a PC application, video clip or document and browse the Internet simultaneously.

"While tons of vendors from all segments of the networking industry have been talking the multimedia talk for quite a while, FVC is the company that's walking the walk by delivering the complete package [soon]," said Daniel Briere, president of TeleChoice, Inc., a Verona, N.J., consultancy.

The First-Family products' use high-speed Asynchronous Transfer Mode (ATM) switching technology to deliver information to the desktop at 25M bit/sec. over widely used Category 3 or 5 twisted-pair wire.

These are among the products:

- The First-Multimedia Switch Family can be built with a stackable/modular architecture that can scale to support eight to 25 ports per switch and 120 users per stack through a backbone switch. The switches come with FVC's Media Operating Software (MOS) — middleware that lets Windows applications use ATM's quality-of-service capabilities.
- The First-Multimedia Gateway Server is an ATM/telecommunications gateway that distributes high-quality remote H.320 video streams among desktops over a wide-area network.
- The First-Multimedia WWW Server enables Internet users to cache data, graphics and video streams off the World Wide Web in a special storage server.
- MOS Live enables live video streams to be encoded in MPEG-1 in real time and then distributes them to desktops.
- First-Multimedia H.320 Storage offers a software developer's tool kit for enabling H.320 video applications.

Correction

Due to reporting errors in a story in the November issue of *Computerworld Client/Server Journal*, "Forte's Three Tiers Lead Corning's Way" (page 35) incorrectly stated that Corning's sales support applications are in production. They actually go on line in January.

Also erroneous was the statement that the company was experienced with Texas Instruments, Inc.'s Information Engineering Facility. It has tested the product but never used it.

The article also misstated the name of TI's Composer development tool. And in a related story, Forte's phone number was incorrectly listed. The correct number is: (510) 869-3400.

OpenMail takes on Exchange

By Suruchi Mohan
BOSTON

Usually staid Hewlett-Packard Co. may have caused a little flutter in Microsoft Corp.'s Exchange Server group when it went public last week with plans to support Microsoft's Windows NT.

OpenMail, HP's client/server messaging platform, currently supports several flavors of Unix. At E-Mail World here, the Palo Alto, Calif.-based company announced it will make OpenMail available for the NT platform next June.

That will put it in head-to-head competition with Microsoft's yet-to-be-released Exchange client/server messaging platform. The oft-delayed Exchange, which is also NT-based, is now expected to ship in the first quarter of 1996.

"The fact that HP is going to take OpenMail and put it on NT is pretty significant for customers in multiplatform environments," said Gary Rowe, a principal at Rapport Communication in Roswell, Ga. "The strength of OpenMail is that it is where some of the next-generation products are trying to get to."

COMPUTERWORLD ANALYSIS: Message management

Scalability is one area where the top LAN E-mail vendors are promising users the world. As they struggle to move from a file-sharing environment to a client/server environment, they are pledging support for greater numbers of users on one server. But if the proof of the pudding lies in eating, the proof is yet to come. None of the products are shipping yet.

OpenMail, on the other hand, is highly scalable and well-suited to handle the messaging load of large organizations, analysts said.

"Microsoft correctly sees HP as a major competitor," said David Ferris, president of Ferris Research in San Francisco. "HP is very important in terms of scalable systems. We don't know how scalable the Exchange server will be."

OpenMail all the way?

Further, OpenMail's reliability may have an impact on Exchange in that users may see OpenMail as an alternative to an Exchange backbone in an NT environment, said Rik Drummond, president of The Drummond Group in Fort Worth, Texas.

Moreover, HP isn't doing a simple port of OpenMail to NT. It is trying to leverage the system-level capability of NT in much the same way as Exchange does, Rowe said. But in trying to bring to OpenMail the same tight integration with NT that Exchange offers, HP will have its work cut out for it, he said.

Also at the show, HP announced the integration of OpenMail with its OpenView systems and network management platform.

Compaq
SmartStart

BMC tightens management link to Patrol

By Patrick Dryden

BMC Software, Inc. will introduce tighter links this week between its Patrol application monitoring suite and major management frameworks.

The integration effort lets administrative staff manage key applications as well as networks and systems from a single, familiar console. To gain control over complex, distributed network environments, users are demanding unified tools instead of a hodgepodge of diverse component managers.

One user, who requested anonymity, said he hopes to trade the "gut feelings and expertise of a few" for the perspective that tool integration could bring.

"We need to see into application activity on the systems and across the network before we can become proactive," said the user, a data resources manager at a pharmaceutical maker.

Integrated options

Patrolview software lets BMC's monitoring agents report to enterprise management frameworks through agent-to-console links or agent-to-agent links.

BMC will offer its Patrolview agent-to-agent linking software this month for OpenView Operation Center, the system, desktop and enterprise event manager from Hewlett-Packard Co., and Tivoli Enterprise Console, the client/server monitor from Tivoli Systems, Inc. In February, BMC expects to ship agent-to-console support for the Spectrum enterprise management platform from Cabletron Systems, Inc. These Patrolview links provide mapping, monitoring and event-handling functions natively from within the support staff's chosen console, said Wayne Morris, product marketing manager at Houston-based BMC.

One large net with the works

NetSolve package offers host-based, client/server combo

By Patrick Dryden

Wide-area network services provider NetSolve, Inc. launched an outsourcing package last week to help mixed-network users combine host-based and client/server communication among their remote sites over frame-relay connections.

The complexity of network management has stimulated demand for selective outsourcing or "out-tasking" services, according to analysts. Administrators complain they can't find, train and keep staff specialists who can design and maintain enterprise networks, so they gladly unload some or all of the burden.

NetSolve's latest ProWatch offering appeals to those SNA users who want to take advantage of frame relay, a high-speed packet switching protocol that is wildly popular for linking widespread LANs. As with its other WAN services, NetSolve in Austin, Texas, guarantees 99.5% availability or it refunds the month's management fee, much like a pizza parlor that promises 30-minute delivery or it's free.

Wide-area networks

ProWatch for Frame Relay Access Devices (FRAD) preserves legacy applications and eases the migration to routed client/server networks, NetSolve officials said. By using the Vanguard FRAD from Motorola Information Systems Group, NetSolve can encapsulate both asynchronous and routed traffic for transportation across a frame-relay WAN.

"Now all those organizations comfortable with their host at headquarters and dumb terminals and printers at remote sites can put PCs on a single network along with them," said Jim Miller, a network engineer at NetSolve.

However, a frame-relay WAN isn't for everybody, Miller cautioned. This approach lowers communication costs only for high-bandwidth applications, not typical terminal traffic. And despite plunging prices for FRADs and frame-relay service, this WAN may prove too costly unless all sites are geographically dispersed.

NetSolve seeks to reduce management costs for customers by streamlining two networks into one. Customers don't even have to reconfigure their statistical multiplexers, which typically can't communicate across a frame-relay network, Miller said

NetSolve's deal makes sense to Howard Grainger, director of information services at Kinro, Inc. He wants to link 10 plants nationwide to a centralized manufacturing and accounting application running on an IBM AS/400 at the manufacturer's Arlington, Texas, headquarters.

"We'll start with field PCs doing high-transaction terminal emulation, then eventually add client/server applications," Grainger said. He evaluated four providers of frame-relay services, including AT&T Corp. But NetSolve offered the best frame-relay expertise, a single point of contact for all aspects of this WAN service and an attractive availability guarantee, he said.

NetSolve designs the network, provides the FRADs, handles all addressing and controller configuration, sets up all frame-relay service and then manages the network continuously. ProWatch for FRADs costs less than $1,300 per month for a 10-site network.

Lantronix tools help troubleshoot switched networks

By Patrick Dryden

A small LAN gear vendor last week launched a line of low-cost protocol analyzers designed to help managers probe the blind spots in switched or highly segmented Ethernet networks.

Lantronix in Irvine, Calif., introduced two- and six-port standalone analyzers that let troubleshooters examine multiple segments remotely from a Windows console. They can check packets entering and exiting a switch or diagnose problems across separate collision domains.

These domains are the subsections created to maintain Ethernet performance for more users and bandwidth-hungry applications. The Lantronix Network Analyzer (LNA) is the first protocol analyzer that specifically monitors both sides of a switch, said Mike Heylin, senior associate at Creative Strategies Consulting in San Jose, Calif.

Despite its late entry to this market, Heylin said Lantronix could shake up entrenched analyzer vendors. "The major vendors talk about making predictive analysis tools widespread, but the LNA is the first realistic product I've seen that really courts first-time users," he said.

Despite its late entry into this market, Lantronix could shake up entrenched analyzer tool vendors.

And coupled with "incredibly aggressive" pricing and helpful features, the LNA addresses the problem-solving needs of many network managers who are outside central information technology groups equipped with tools, expertise and a decent budget.

The LNA costs $2,995 with two ports and $3,995 with six ports. Dual-port analyzers can cost $3,000 to $12,000 more than the LNA, and a multisegment configuration from market leader Network General Corp. in Menlo Park, Calif., could run 10 times as much, Heylin said.

That cost-effective flexibility appealed to beta tester Max Rupe, a network engineer at Dallas-based MicroCity LAN Engineering Services, Inc. He said he intends to add one LNA to the tool kit he carries and place others at client sites for remote diagnosis.

"I'm not going to spend $17,000 for a Network General Corp. Sniffer to haul around these sites or leave on the LAN at a mom-and-pop shop," Rupe said.

And when compared with entry-level software-based analyzers, the LNA provides more functions, he said. "I can capture and compare packets on multiple routed or switched segments, generate traffic to force Ethernet problems to show up and do it all remotely," he said. Each model includes Simple Network Management Protocol (SNMP) agent software, which allows the LNA to interact with SNMP consoles, and Windows-based monitoring software called EzMan.

EzMan automatically discovers all LNAs placed throughout a network and monitors them simultaneously. It charts each segment's throughput and displays basic statistics on packet sizes, packet errors, most active stations and protocols. It also configures the alarms, filters and decoding functions.

& **Another player** joins switching fray. See page 69.

PacTel CIO gears up for deregulation

By Mitch Wagner

Diana Whitehead took the reins last Friday as the first chief information officer in more than two years at the Pacific Telesis Group, a $9.2 billion provider of telephone service for most of California and Nevada.

Whitehead, 48, is a 15-year veteran at Pacific Telesis, which owns Pacific Bell, Nevada Bell and several Internet, networking and new media ventures.

Her responsibilities include standardizing the company's systems, including desktops, servers and mainframe systems; and consolidating information systems functionality between Pacific Bell and the company's other, much smaller, business units.

"We need to get our arms around the precise resources there. That will be one of my first responsibilities," Whitehead said. She has experience in the IS department and on the business side, most recently as head of the company's billing services group.

Diana Whitehead *is Pacific Telesis Group's first chief information officer in two years*

On the line

California's first telephone exchange opened in 1878 in San Francisco. The first coast-to-coast phone call, in 1915, was from San Francisco to New York.

One of Whitehead's first goals will be the time-honored tradition of big companies that have pulled together numerous information systems from different sources: standardizing.

"We want to ensure consistency of architecture and standards across the organization and a more consistent and professional approach to development," she said.

Whitehead will oversee about 3,500 IS staff members at Pacific Bell and about half a dozen IS organizations in the company's Enterprises divisions, which each have a separate CIO. The Enterprises IS staff has about 250 employees.

Pacific Telesis will need a more nimble and streamlined IS function to face competition that it has never seen before. Beginning March 1, telecommunications reform will let long-distance carriers such as AT&T Corp. and MCI Communications Corp. bring competition to Pacific Bell's backyard.

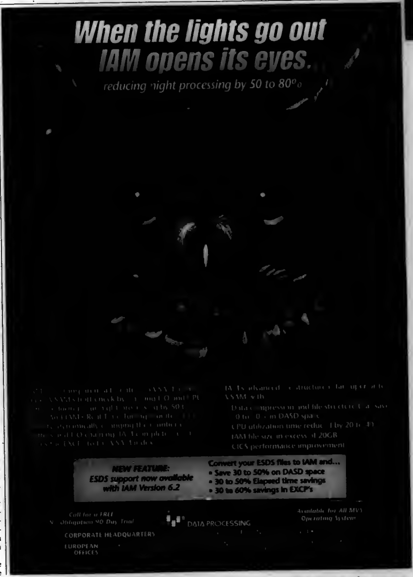
"There are a lot of companies positioning for the ability to provide local service beginning next year when the industry becomes fully deregulated," said Bob Larribeau, president of Larribeau Associates, a telecommunications consultancy in San Francisco.

"There will be a scramble to take the cream off the top with local business. The ability to deploy new services will be key," he said.

Pacific Telesis has about 50,000 employees, and all but 2,000 of that staff work for Pacific Bell and Nevada Bell. Pacific Bell, with $8.9 billion in revenue, provides phone service for about 77% of California's 32 million residents, while Nevada Bell provides service for about 30% of that state's 1.5 million residents.

The remainder of the company, Pacific Telesis Enterprises, develops information services, consumer broadband and video services, electronic publishing, wireless services, directory publishing and public phone service.

Whitehead's predecessor, Jack Hancock, was vice president of technology and marketing. That department incorporated information technology functions. Hancock left the company in late 1993.



CAMPBELL LAIRD

Glass wall shattered as big iron shuttered

By Dan Richman

They killed the mainframes at Global Marine, Inc. last week. But while users rejoiced, not everyone was happy.

"I'm going to miss the long, quiet days behind the glass wall; I know it will be 10 times harder to manage and maintain our client/server systems," said Richard Hudson, chief information officer at the Houston oil and gas drilling company. "But our users love the new freedom, and they'll never go back."

Culminating a four-year migration to client/server computing, Global Marine last Thursday shut down its two watercooled IBM 3081s running Focus and VSAM databases and the CICS transaction monitor.

Cobol applications were replaced by off-the-shelf accounting and payroll/personnel packages and by software developed in-house to track rig maintenance.

In came two Unix-based Sun Microsystems, Inc. machines with a Sybase, Inc. relational database management system and nine Compaq Computer Corp. application servers with Novell, Inc.'s NetWare.

The $350 million company projects savings of 29%, or at least $1 million, next year — its first year of pure client/server computing — compared with 1991, its last year of pure mainframe computing.

Similar savings are expected every year, and information technology staffing has been cut from 35 to 22 employees.

About 500 end users — 180 of them aboard one of the company's 28 offshore drilling rigs — sit at PCs now.

Putting PCs on Global Marine's four-story-high drilling platforms, some of them 200 miles offshore, helped drive the move to client/server. A mainframe link would require a constant satellite connection, which can cost $100,000 a month, Hudson said. Now, data from the rigs is copied onto disks and mailed or hand-carried to regional offices.

"The world moves on, and I don't foresee ever having mainframes here again," Hudson said.

Postal kiosks on the way

By Gary H. Anthes

WASHINGTON

The U.S. Postal Service last week took the first step toward opening the electronic doors to a wide variety of government services.

It awarded contracts of up to $10 million each over three years to four vendor teams, each of which will work with a number of federal agencies to develop a computer-based kiosk. Eventually, 10,000 kiosks could be deployed in post offices, libraries and shopping centers across the U.S., officials at the Postal Service said.

The kiosks — to be delivered early next year — will be used to provide government information to enable citizens to apply for services and benefits or pay fees.

The awards went to vendor teams led by Cordant, Inc. in Reston, Va.; Digital Equipment Corp. in Maynard, Mass.; Federal Government Region in Greenbelt, Md.; IBM Government Systems, Inc. in Houston; and North Communications in Marina del Rey, Calif.

Each team will work with a different set of federal agencies, such as the Internal Revenue Service, the Social Security Administration and the Veterans Administration. The kiosks will be built to common systems standards.

News Shorts

Is Taligent's star falling?

After falling victim to the conflicting agendas and product development cycles of its parent companies, **Taligent, Inc.** will become an **IBM**-run operation called the Taligent Object Technology Center. Along with sister company, Kaleida, which was recently dismantled, Taligent is seen as another failed piece of the ambitious IBM/**Apple Computer, Inc.** partnership (see related story, page 32).

Half the staff are expected to be laid off, but the offices reportedly will remain in Cupertino, Calif. Partners Apple and **Hewlett-Packard Co.** will still have rights to Taligent's Commonpoint object technology. The vendors all declined comment; an announcement is set for Monday.

Lotus exodus continues

June Rokoff, **Lotus Development Corp.**'s senior vice president of worldwide services and support and unofficial troubleshooter, and Hamang Davey, vice president of strategic alliances, are leaving the Cambridge, Mass., company. Rokoff is the eighth corporate officer to leave since IBM bought the company; Davey said he had completed his work integrating the two companies.

IBM combines 'net teams

IBM in Armonk, N.Y., has named Irving Wladawsky-Berger, former head of the company's workstation division, to take charge of all Internet software strategy. IBM confirmed last week it is combining various Internet development teams into a separate division within its software group.

Intuit loses money, CFO

Though it reported revenue of $96.8 million, compared with the $68.2 million reported for the same period last year, **Intuit, Inc.** posted a loss of $21.1 million for its quarter ended Oct. 31. The company said the loss was related to a $10.1 million acquisition charge, investment in new products and the seasonal nature of its financial software. The Menlo Park, Calif., company reported a similar loss of $54.6 million during the same period last year. Separately, Chief Financial Officer Bill Lane announced plans to retire by next July.

IBM goes with the Flow

IBM sought to clear up its workflow strategy last week by upgrading its Flowmark software. Flowmark 2.2, due in February, adds tight integration with Notes and IBM's imaging software, manages more users and work processes, runs on distributed servers and includes a customizable work list interface.

Microsoft: Can we talk?

Microsoft Corp. in Redmond, Wash., last week announced V-Chat, a multimedia chat service on The Microsoft Network that lets users communicate in real time while exploring two- and three-dimensional "chat rooms" on the network. Users can represent themselves as virtual beings called "avatars" or with their own scanned images. V-Chat begins beta-testing in mid-December with a final release set for mid-January.

Think again!

Trying to rise from the ranks of the near-dead, **Thinking Machines Corp.** in Bedford, Mass., last week introduced software for developing and running parallel applications across multiple networked systems. GlobalWorks initially links up to 64 of **Sun Microsystems, Inc.**'s Ultra 1 systems. Pricing starts at $200,000 for a four-processor setup. Thinking Machines early last month filed a plan for emerging from Chapter 11.

Gateway to virtual voice

AT&T Corp. in Basking Ridge, N.J., last week announced a service that lets users with analog modems or Integrated Services Digital Network dial in to their company's frame-relay network. The Virtual Gateway Service is being targeted at existing customers of AT&T's virtual voice networks.

Way COOL

Early next year, **Computron Software, Inc.** plans to make documents created with the Rutherford, N.J., firm's Computer Output OnLine (COOL) software and related workflow and financial software, accessible from the World Wide Web. Users with a Web browser will be able to query and view archived COOL documents.

IBM's STAD fades away

IBM quietly dissolved its year-old Systems Technology and Architecture Division (STAD) in Austin, Texas, earlier this month, the company confirmed last week. The Microelectronics Division in Fishkill, N.Y., has been given STAD's responsibility for developing high-performance PowerPC microprocessors for IBM servers.

Boeing Takes Off With The Flying Dutchmen

6

The Boeing Commercial Airplane Group took off with the 777 this year; they also took off with the Baan Company. About to make a major process redesign commitment, they invited in "The Flying Dutchmen" from Baan Company. The result: Boeing placed an initial order valued at $20 million for Baan's TRITON family of client-server finance, manufacturing, distribution, transportation, service and project management applications.

If you are about to make an ERP decision, Baan's Flying Dutchmen would be delighted to introduce you to a significantly new perspective. One shared by ABB, Hitachi, Mercedes-Benz, Philips, Snap-On Tools and ... oh yes ... by Boeing. The worst that can happen is that you'll get a free hat commemorating Boeing's taking off with Baan. Call Baan at 800-889-9818, ext. 1001. Then clear a landing spot, along with some time on your calendar.

BaaN

The Flying Dutchmen

TRBA

Tool gives Web developers wider range

By Frank Hayes

ParcPlace-Digitalk, Inc. is about to drag the Internet into the age of modern application development tools.

The Sunnyvale, Calif., company last week unveiled VisualWave, a graphical tool kit that lets developers create full-blown client/server applications that use a World Wide Web browser as a display device.

VisualWave is the first Web development environment that lets developers use a mouse to drag together screens and code business logic in a scripting language, said beta tester Tom Thornbury, lead architect at the electronic commerce group of Dun & Bradstreet Information Services in Parsippany, N.J.

"If we'd had this from the beginning, we wouldn't have built all the stuff we did from scratch," Thornbury said. Last year he built a major Web-based application by cobbling together his own set of tools.

Today, Web-based applications are typically assembled from pieces written in different languages such as Hypertext Markup Language (HTML) and Perl, making it a complicated and tedious process. As a result, most Web applications only display information or at most prompt users to fill in a form to get information from a database.

In contrast, VisualWave is "a Powerbuilder-like, Visual Basic-like application building environment," said Harpal Sandhu, chief information officer at Integral Development Corp. in Palo Alto, Calif. Sandhu also has tested VisualWave.

The $4,995 development environment is scheduled to ship this month for Windows platforms and early next year for Macintosh and Unix. A server component required to deploy the applications runs on Unix and Microsoft Corp.'s Windows NT servers; it costs $9,995.

Like more conventional visual fourth-generation languages, VisualWave lets developers build a graphical user interface (GUI) using a mouse. Each GUI screen is automatically translated to HTML, which lets the application be displayed on most popular Web browsers. VisualWave also lets developers connect to databases from Oracle Corp. and Sybase, Inc. as well as IBM's DB2. And it can develop business logic in Smalltalk using an object-oriented development environment.

Still not nirvana

VisualWave will be a huge improvement over existing Web development tools, but it has limitations compared with conventional visual development environments.

"Nothing will let you point and click your way to nirvana," Thornbury said. Users will have to wait for future versions for support for Microsoft's OLE object architecture and the Object Management Group's Common Object Request Broker Architecture, which is favored by IBM and most Unix vendors.

VisualWave splashdown

VisualWave and Java do not directly compete against each other. In fact, VisualWave will support Java applets in a future release.

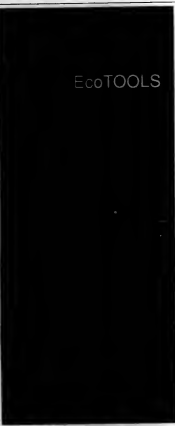
VisualWave

- For Web server applications
- Client/server development environment
- Uses Smalltalk language

Java

- For Web client applications
- Stand-alone application development language
- Uses Java language

Object tools in use at Canadian financial firms. See page 88.



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IMS takes distributed tack

By Craig Stedman

IBM last week quietly introduced object-oriented software that lets mainframe applications running behind its IMS transaction manager be partially distributed onto OS/2 servers.

The software lets big shops that rely heavily on IMS put a client/server sheen on their legacy programs.

However, IBM dropped plans to market IMS Client Server Object Manager (CSobject) for OS/2 as a separate product. Instead, the software will be bundled into IMS Version 5, the latest release of the transaction manager. Expected support for the earlier IMS Version 4 also was scuttled, IBM officials confirmed.

Jim Pearce, product manager for IMS CSobject, said the bundling with IMS Version 5 was driven "by customer demand." But some observers interpreted the move as a sign that IBM didn't have high expectations for the software on its own.

Off-loading pieces of IMS processing to local servers "is an interesting idea, but they have a lot of work to do to make the product more palatable," said Sandy Laufer, an analyst at Gartner Group, Inc. in Stamford, Conn. Resolving conflicts among multiple servers trying to get at the same data could bog things down, and the initial support for just OS/2 "really limits it," she added.

The software, which was detailed on IBM's World Wide Web page, lets IMS transaction data be configured as objects that get cached at local servers. End users can then access and update the data without going to the host mainframe, Laufer said. Updates can be sent to mainframe databases in real time or st longer intervals, he said. Shipments are scheduled for next March.

IMS CSobject could "create the appearance that you're distributing data without actually distributing it," said an information systems executive at a large Midwestern insurance company that runs its policy-writing applications through IMS.

The company's application for writing commercial policies "is too big to even think about rewriting" in a full client/server vein, the executive said. Modifying part of it with IMS CSobject might provide a way to stop the growth of mainframe usage, be added

CICS, IBM's other mainframe transaction manager, has more than 10 times as many installations as IMS, according to analysts. But IMS typically runs "the really big, beavy-hitter applications" in large shops because until recently, it provided better data reliability than CICS, Laufer said.

What you need

IBM's three-tier IMS Client Server Object Manager for OS/2 requires the following hardware and software

Mainframe

Operating system: MVS Version 4.3 or higher

Transaction manager: IMS Version 5

Database: IMS Version 5 or DB2 Version 2.3 and above

Local server

Microprocessor: 66-MHz 486 or above

Memory: 8M bytes minimum, 32M bytes recommended

Operating system: OS/2 Version 3

Database: DB2 for OS/2 Version 1.2

Clients

Microprocessor: 66-MHz 486 recommended

Memory: 8M bytes minimum, 16M bytes recommended

Operating system: OS/2 Version 3

& **Move data from old disk** subsystems to new ones without taking files off-line? See page 77.

Cabletron buys SMC switch unit

By Bob Wallace

Cabletron Systems, Inc.'s strategic bid last week to acquire Standard Microsystems Corp.'s (SMC) switching unit will help Cabletron extend its switching line to the desktop in a move users said is overdue.

Cabletron customers and industry analysts agreed that the planned $77.5 million buy, the company's first acquisition, would fill a gap and help stave off rivals that have made similar moves of late.

Observers will be watching to see how Cabletron handles the merger.

"Cabletron has no expertise in acquisitions, so it remains to be seen if they can assimilate the products and people," said Skip MacAskill, an analyst at Gartner Group, Inc. in Stamford, Conn.

MacAskill added that be isn't convinced that Cabletron, which primarily sells direct, has the distribution channels to drive the TigerSwitch line. Cabletron plans to sell the product line directly and through SMC's channels.

Vital statistics

Cabletron Systems plans to pay $77.5 million in cash for Standard Microsystems' Enterprise Networks Business (ENB) unit, pending regulatory approval

Company	Cabletron	SMC ENB
Headquarters	Rnchester, N.H.	Andover, Mass.
Number nf employees	5,500	100

Reason for acquisition: Cabletron gains entry into the low-end switch market

Products Cabletron gets: SMC's TigerSwitch 100 10/10n Fast Ethernet switch, TigerSwitch XLE Ethernet switch and ES-1 chassis switching system

Analysts said it also would create a serious overlap issue at the high end between Cabletron's MMAC and SMC's ES-1, putting ES-1 users at high risk. Cabletron in Rochester, N.H., said it wouldn't drop the five-slot ES-1 but didn't provide details or indicate whether the two product lines will be merged.

Buying the SMC unit would bring Cabletron the TigerSwitch 100, s 10/100 Fast Ethernet switch; the TigerSwitch XLE Ethernet switch; and the ES-1 chassis bub.

The acquisition received generally high marks from Cabletron users and watchers.

"They found an area where they needed a kick start, and the SMC move makes good sense," said Barbara Maaskart, director of information services at Emory University's Rollins School of Public Health in Atlanta. "It's a smart move for them and an important one because we would have had to look elsewhere for [desktop switching] products."

Emory University's Barbara Maaskart: *Cabletron needed a low-end 'kick start'*

The switching superpower also faces a network management issue. "They have to integrate Cabletron's enterprise management system with SMC element management system, which is doable but will take a while," MacAskill said.

Cabletron said users would be able to manage SMC switching products as icons from its popular Spectrum network management system within 30 days of the purchsse.

Although Cabletron has excelled at selling high-end and midrange chassis-based switching hubs, its low end has been lacking. SMC's switching unit has fared well in the low-end switching market with the TigerSwitch 100, a versatile and low-cost system that provides either a dedicated 10M or 100M bit/sec. of switched Ethernet bandwidth from each port.

& **New tools** for network management debut. See page 60.

OneWorld without Unix

By Julia King

J. D. Edwards & Co. will roll out a distributed, client/server version of its IBM AS/400 enterprise business software next week, but users looking for promised Unix applications will bave to wait until the end of next year.

The delay indicates that the Denver-based vendor once again miscalculated the development time and difficulty involved in breaking into the wider world of Unix-based software, said Eric Keller, an analyst at Gartner Group, Inc. in Stamford, Conn.

"Three years ago, they told us 1994, then early '95, then late '95. And now it's just AS/400, and Unix won't be available until '96," he said.

In the meantime, J. D. Edwards is delivering what company executives are touting as one-of-a-kind features for its new AS/400 client/server application, known as OneWorld. Those features include the following:

- A feature that lets customers define how to split data and processing across clients and servers.
- The ability to create software objects in any programming language and link them to OneWorld applications.

OneWorld software uses the same AS/400 database as the host-based software, so users can migrate to client/server applications gradually, said Travis White, director of corporate communications. To migrate to the client/server version, users must have Version 3 Release 1 of the OS/400 operating system and run Version 7.1 of J. D. Edwards' AS/400-based World software.

In tests, the OneWorld software scored high marks from Jim Hurst, IS director at the store planning and construction division of The Limited, Inc., a $7.2 billion retailer based in Columbus, Ohio.

Hurst used production data associated with the remodeling and construction of several hundred stores to test OneWorld's job costing, financial and contract management modules. Data was split between an AS/400 and SQL Server 6 database on a Microsoft Corp. Windows NT server. Both were linked to client PCs over a Novell, Inc. network.

Under this scenario, construction managers on-site at retail locatioos could use laptop PCs to query the system about the status of shipments and cost of construction materials.

J. D. Edwards
Denver

Products: World business software and OneWorld client/server software, both for AS/400 platforms

Number of customers: 3,500 in 91 countries

1995 revenue: $340 million

& **Hollywood drives Unix** software to higher heights. See page 53.

Mobile vendors vie for lead in sales automation

Aurum, Siebel Systems unveil products

By Mindy Blodgett
BOSTON

Although Aurum Software, Inc. in Santa Clara, Calif., seems poised to grab the customers orphaned by the summer exit of sales force automation giant Sales Technologies, Inc., there is no clear market leader.

The consensus of industry observers at last week's Mobile World/Field and Sales Force Automation conference here was that battling niche vendors would do well to jockey for position since the market for field automation is taking off.

"The market is starting to explode," said Tim Bajarin, president of Creative Strategies, Inc., a consultancy in Santa Clara, Calif. As proof, he pointed to the show's attendance figures — more than 1,000 at the conference and about 40,000 expected at the exhibition, double last year's numbers.

Thrown for a loop

Exploding or not, the market was thrown into confusion when Sales Technologies, a subsidiary of Dun & Bradstreet Corp. and the largest provider of sales force automation products, announced in July it was discontinuing the marketing and development of its products, Snap for DOS and Snap for Windows. Last week, D&B chose Aurum as its preferred software service provider for Sales Technologies customers.

The market was thrown into confusion when Sales Technologies, the largest provider of sales force automation products, announced in July it was discontinuing the marketing and development of its products, Snap for DOS and Snap for Windows.

Another sales force automation player hoping to capitalize on the growing interest in the sector is Siebel Systems, Inc. in Menlo Park, Calif.

"You can bet we are going after those D&B customers, too," said Mark Hamilton, director of marketing communications at Siebel.

In the meantime, users are increasingly turning to sales force automation as a way to distribute sales information more quickly and efficiently, according to Jack L. Dausman, assistant director of information systems at Univax Biologics, Inc. in Rockville, Md.

Univax, a biotech company with about 20 salespeople, has used circuit-switched technology to field a wireless sales automation project. The project gave mobile users wireless access to electronic mail, the LAN and a contact management database. The biggest issue was training, Dausman said. "[It] was absolutely crucial," he said.

Plenty to see

Users such as Dausman had plenty to peruse at last week's show, including the following new products and upgrades:

- Siebel Systems announced the shipment of Version 2 of its Siebel Sales Enterprise application. Priced at $1,750 per user, the updated product features support for conducting business in multiple currencies.
- SalesKit Software Corp. in St. Louis announced the release of SalesKit Open Version 5.1, a product it says enables businesses to rapidly deploy sales force automation systems. SalesKit Open uses a system called Rapid Product Deployment, a two-phased implementation that begins with mapping a customer's business needs and sales. Pricing was not available.
- Aurum Software announced an extended integration program with Microsoft Corp.'s BackOffice suite of server applications. Aurum's SalesTrak software will use DBSynch for Windows NT, a new data synchronization product, to give remote users access to Windows NT.

Wireless notebooks continue to inch ahead. See page 72.

Bell Atlantic puts wireless network service on the road

Boston-area CDPD service one of many products announced

By Mindy Blodgett
BOSTON

Another wireless data transmission network is up and running.

Bell Atlantic Nynex Mobile in Bedminster, N.J., announced last week at the Mobile World/Field and Sales Force Automation conference that it had turned on Cellular Digital Packet Data (CDPD) commercial service in Boston.

The service, called AirBridge Packet, is now available in the city and along Route 128 — a state highway known locally as America's Technology Highway. The network is the first CDPD service in Boston.

In its entirety

Bell Atlantic now offers CDPD and circuit-switched cellular data service throughout its cellular coverage area, according to Raymond Dolan, vice president of marketing at the carrier. The company's CDPD service is offered in Washington/Baltimore, Pittsburgh, New Jersey, North Carolina, Connecticut, Arizona and New York City.

Hughes Network Systems in Washington built the infrastructure and the mobile base stations for the new network.

Other mobile computing news from last week's conference included the following:

- A new laptop configuration called the Mobile Trade Station, from telecommunications company Metriplex, Inc. in Cambridge, Mass. Metriplex has turned a Digital Equipment Corp. Hi Note computer into a wireless way to get stock updates as well as headline news, currencies, indexes and futures. The device uses a two-way modem and runs on CDPD. The trade station will be on the market in January and will probably cost less than $4,000, according to Metriplex President Steve Stutman.
- An announcement from XcelleNet, Inc. in Atlanta about expanded messaging capabilities for its RemoteWare mobile computing software. RemoteWare Mail 2.5 now supports Isocor's messaging gateway products. RemoteWare Mail 2.5 users will be able to exchange messages with Microsoft Corp.'s Mail and Lotus Development Corp.'s CC:Mail via the Internet. The upgrade is aimed at companies using the Internet as a communication and information network.

Features of XcelleNet's RemoteWare Mail 2.5

Lets users exchange mail with Internet mail users without a direct Internet link or personal Internet account

Gives users quick viewing capability of long mail directories

Gives users access to Microsoft's Mail (available first-quarter 1996)

- A new portable multimedia presentation computing device from Ricoh Corp. in West Caldwell, N.J. The device, which looks like an Etch-a-Sketch, or a slate, has a CD-ROM drive, a 9½-inch screen, a built-in speaker and space for Type II and III PC Cards. The device is not yet available in the U.S. but has been marketed in Japan.

Tim Bajarin, president of Creative Strategies, Inc., a consultancy in Santa Clara, Calif., said the Ricoh gadget "really pushes the envelope in terms of presentations." Pricing was not available.

Gateway 2000's Solo shows it sets itself apart. See page 49.

Message on ease of use comes in clear

By Suruchi Mohan

It must be something about their chemistry.

Whenever electronic-mail enthusiasts descend en masse, they affect the weather. At the Electronic Messaging Association conference last spring, host city New Orleans saw its worst rainstorm in some 30 years. Though not quite as dramatic, the E-Mail World show in Boston last week ushered in the first snowstorm of the season, following a spell of 60-degree weather.

But the snow certainly did nothing to cool the enthusiasm of about 40,000 attendees crammed into the Hynes Convention Center. Vendors gushed about the traffic in their booths.

Some announcements were made, but none will make the 1995 edition of this show stand out. However, they do mark little steps in the industry's progress toward greater ease of use both for end users and administrators.

E-Mail World

The following is a taste of some of the announcements:

- After months of taking a beating over not having local replication, **Microsoft Corp.** in Redmond, Wash., announced it will include this feature in its Exchange Server Release Candidate 1, to be shipped next week. Local replication will allow users to synchronize the folders on their client and server machines. Microsoft had so far provided only server-to-server replication to its beta testers.
- **Lotus Development Corp.** in Cambridge, Mass., announced Version 3 of CC:Mail for the Macintosh. This includes new features such as message viewing, management and "droplets" — the ability to automate repetitive tasks by creating icons on the Macintosh Finder.

The company also unveiled two access units for Lotus Messaging Switch and SoftSwitch Central. These two CC:Mail and Notes gateways, which will ship on the OS/2 platform, allow a greater number of messages to pass through them.

- Also in the area of management, **Baranof Software, Inc.** in Watertown, Mass., announced that its MailCheck E-Mail management software now supports **Netscape Communications Corp.**'s replication agents. These agents are a feature of Collabra Software, Inc.'s Collabra Share 2.1.
- **NCD Software Corp.** in Mountain View, Calif., released a mail server called Post.Office for Z-Mail. It runs on Windows NT and Unix. NCD also unveiled a utility for converting CC:Mail mailboxes to Z-Mail, NCD's messaging product. Known as CC-to-Z, this utility retains CC:Mail messages and directory entries as users move over to Z-Mail.

Unicenter heads for cyberspace

CA's Internet plans include Cablevision partnership

By Thomas Hoffman
SCOTTSDALE, ARIZ

Computer Associates International, Inc. will hop into the Internet fray this week with the announcement of its plans to provide systems designed to help manage Internet-related traffic and secure electronic commerce.

CA will offer an Internet-enhanced version of its CA-Unicenter systems and network management software early next year. The software giant's Internet activities also will include a partnership with Cablevision Corp. in Woodbury, N.Y., said Charles B. Wang, chairman and chief executive officer of CA in Islandia, N.Y.

CA and Cablevision are testing the viability of giving cyberjunkies access to the World Wide Web through high-bandwidth cable lines, Wang said last week during his keynote address at CA's CEO Technology Retreat here. The semiannual retreat, a symposium and computer literacy course, attracted about 60 corporate executives this session.

Wang's Charles B. Wang *says CA and Cablevision are testing the viability of providing Web access through high-bandwidth cable lines*

The bandwidth for cable "is 50 to 100 times faster than traditional phone lines," Wang noted.

A sampling of the CEOs gathered at the retreat turned up a mix of skepticism and interest about CA's Internet plans.

"We'd certainly be interested [in a Unicenter/Internet tool]. But most of our customers and the companies in our industry are technological laggards that still prefer paper-based bills of lading and packaging slips," said Peter St. John Reid, president of Titan Steel Corp., a Baltimore steel processor.

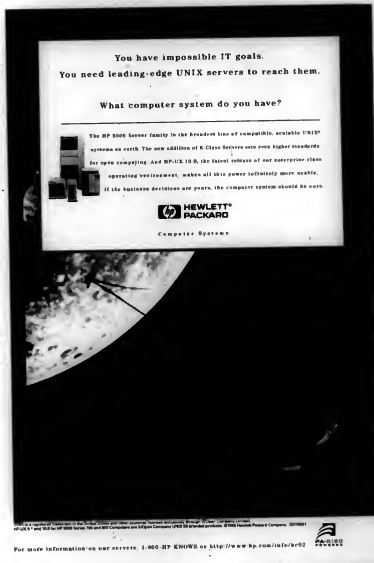
Holding out

Most executives here applauded CA's software plans but were decidedly doubtful about getting involved with Internet-based electronic commerce any time soon. That kind of hesitancy will likely make it challenging for chief information officers to lobby their boards of directors for funding for such ventures.

"We do most of our work over the phone through telemarketing, so I just don't see a fit for us to use the Internet at this point," said J. Allan Thorlakson, president and CEO of Tolko Industries Ltd., a Vernon, B.C., forest products manufacturer.

Medex, Inc., a Columbus, Ohio, manufacturer of disposable medical supplies, has electronic data interchange connections with hospitals and other customers, said Terry L. Sanborn, the company's senior vice president and chief operating officer. But because the medical supply business is a close-knit market, Sanborn said he doesn't see a compelling reason for his organization to jump on the Internet electronic commerce bandwagon — at least not in the U.S. "But this could provide us opportunities to expand into the Third World," he added.

CA officials declined to disclose details of their Unicenter/Internet plans, but the package is expected to provide much of the functionality that Unicenter delivers to distributed computing shops that run Unix and Microsoft Corp. Windows NT systems. Unicenter features include single sign-on security, storage management and workload scheduling.



Digital boosts OpenVMS

Integration strategy puts users' minds at ease — for now

By Neal Weinberg

OpenVMS lives!

Digital Equipment Corp. today will make good on its pledge to develop middleware and other enhancements so users can integrate the proprietary OpenVMS operating system with Microsoft Corp.'s Windows NT.

At the Digital Equipment Computer Users Society (DECUS) conference in San Francisco, the company will release a 64-bit version of OpenVMS, a Win32 application programming interface, development tools and a raft of other products and partners.

"They are delivering on what they promised they would deliver six months ago," said Jeff Killeen, president of Information Design and Management, Inc. in Hopedale, Mass. "Everyone believes the strategy is the right strategy. The issue is, will the proof be in the pudding?"

Question answered

The integration strategy, dubbed the Affinity Program, was a response to users who fretted that OpenVMS was being neglected while Digital focused on its two other anointed operating systems, Unix and Windows NT. Users also worried that independent software vendors were writing to NT, not to OpenVMS.

Digital essentially decided to cede the middle level in a three-tiered client/server model to application-rich Windows NT, while making a stand on the high ground — the mission-critical, enterprisewide, data management arena — with OpenVMS, said Jonathan Eunice, an analyst at Illuminata in Nashua, N.H.

"You either have to play to beat Microsoft or be a real good partner with them. Digital has chosen to accommodate with NT," Eunice added. "It's a real good strategy."

The benefit for current users is that Digital is "making VMS an even better 7-by-365 product," Killeen said. And that helps all users, even those who aren't interested in moving applications to NT.

For example, Joe Pollizzi, project engineer at the Space Telescope Science Institute in Baltimore, has a slew of Digital machines (both VAX and Alpha) running VMS for complex scientific applications, including the Hubble Telescope. He said he isn't looking at NT.

Pollizzi said the fact that Digital is delivering on its promise to upgrade VMS is reassuring. "This gives me confidence overall in their direction," he said. It means that "VMS itself has got a new life," he added.

"Personally, I'm pleased to see they're devoting heavy engineering resources to improve VMS," said Bill Law, lead product support specialist at Cincom Systems, Inc. in Cincinnati. "I'm excited by the new features," added Law, who is beta-testing OpenVMS 7.0.

Early indications are that the strategy seems to be working, said Chris Christiansen, an analyst at International Data Corp. Application developers are signing on, and customers are reporting good results.

"Listen, VMS ain't dead yet," Eunice said. "All things considered, the message I get is that VMS continues to be a better production operating system than Unix and NT, and not by a little but by a whole lot."

Catch the wave

Affinity Wave 1 is the first in a series of products from Digital for OpenVMS-to-Windows NT integration

PRODUCT	DESCRIPTION
ACMSxp Version 1.0 for Windows NT	For developing transaction processing applications.
Reliable Transaction Router Version 3.1 for Windows NT	Fault-tolerant middleware for on-line transaction processing.
DECadmire Version 3.0	An application development tool.
OpenVMS 7.0	64-bit operating system with new log-structured file system and kernel threads.

3Com unveils virtual LAN master plan

Yet users remain indifferent; see VLANs for future

By Bob Wallace

3Com Corp. last week outlined its blueprint for virtual LANs (VLAN), the hugely hyped scheme that lets network managers group users into logical groups regardless of where they are located.

VLANs are supposed to be more flexible; once users are grouped together with the computing resources they need to access, most other traffic on the network can be screened out. Administrators can also use VLANs to restrict access to certain resources.

But VLAN technology still is largely virtual, and users don't seem to be clamoring for them. Since Asynchronous Transfer Mode (ATM) increasingly is being used in backbone networks, analysts say a VLAN strategy must include ATM.

First things first

The first phase of 3Com's three-phase VLAN plan is based on using ATM to provide VLAN functionality for its Cellplex 7000 ATM switch and LinkSwitch 2700 Ethernet-to-ATM switches (see chart). In the second phase, 3Com switches will support VLANs that are created based on protocol address or subnet. In the third phase, VLANs will be created based on so-called "policies."

Cisco Systems, Inc., IBM and Alantec Corp. also have outlined VLAN plans.

Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy, said users should make sure their vendor's game plan is based on ATM. "All of the plans are pretty close technologywise, and it seems that 3Com is making an effort to accommodate ATM. But I'm not sure that 3Com's plan is better than others," he said.

3Com acknowledges that users aren't yet demanding VLANs. Rather, customers see them as a future requirement, so basing networks on ATM becomes even more important because that technology is seen as the switching scheme of the future.

"It's not like MTV. We're not hearing users say, 'I want my VLANs,'" said Andy Gottlieb, director of marketing for LAN internetworking at 3Com. "But [VLANs] will be necessary when users build very large switched networks."

Some 3Com users agreed with Gottlieb.

"VLANs aren't an issue in our environment because we have a flat network with only four file servers and about 1,100 end users," said Earl Horgeshimer, manager of distributed systems at Scottsdale Insurance Co. in Scottsdale, Ariz. "If we had a larger network, with say 30 or 40 file servers, it would be a whole different story. But we don't have any performance problems or other locations to tie in."

3Com's VLAN plan

3Com will integrate VLAN technology into its products in three stages

PHASE	PRODUCTS WITH VLAN
Phase 1: Now until mid-1996	3Com's Cellplex 7000 ATM switch, LinkSwitch 2700 Ethernet to ATM switches, LANplex switch with full management (now)
	LinkSwitch 1000/3000, LinkSwitch 2000 TR and switching in Chipcom Oncore (mid-1996)
Phase 2: Begins in mid-1996	Features will be built in to 3Com switches and adapters
Phase 3: 1997	Other 3Com products

HP call center melds PCs, Unix

By Jean S. Bozman

CUPERTINO, CALIF

Taking a chance that large user sites will want to outsource the development of customer service call management systems, Hewlett-Packard Co. will announce a turnkey call center system this week.

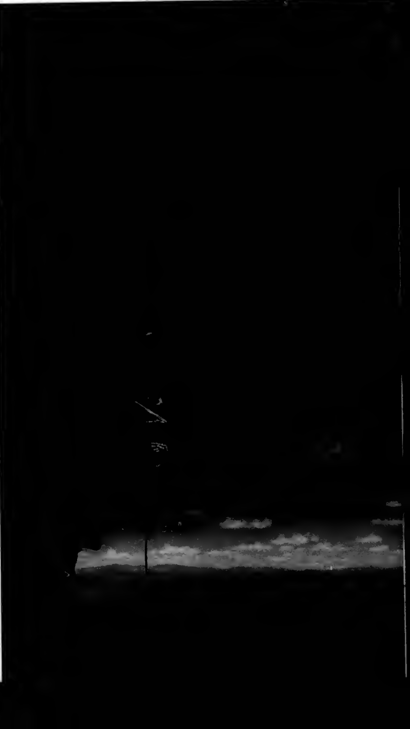
HP's Smart Contact Call Center architecture combines off-the-shelf PCs and Unix servers, packaged applications and the services to customize and install them. HP has mixed old standbys, such as its 5-year-old Computer Telephony Integration server, with its new Customer Contact Manager (CCM) middleware, which knits many Unix servers into a unified system.

Prices for CCM alone will range from $85,000 to $3.5 million for large systems, HP said.

Shortcut

Integrated systems such as this one will let users bypass traditional information systems development projects, analysts said. "A lot of IS organizations are dealing with legacy systems and fragile databases and would have to do a lot of re-engineering," said Jim Burton, president of C-T Link, Inc., a Boston consulting firm. IBM offers a competing CallPath system for its RS/6000 Unix servers, he said.

But many companies have acted as their own systems integrators, including banks, airlines and telephone companies. They have combined packaged software, private branch exchanges and voice-recognition systems or turned to proprietary solutions. "There have been monolithic, stand-alone systems," one Midwest user said. "These vendors are now hustling to get into client/server architectures."



USED TO BE INSURMOUNTABLE, ISN'T.

Hospitals call ATM good medicine

By Neal Weinberg

Doctors at Duke University Medical Center can sit down in front of their PCs and call up 10M-byte X-ray images in a blazing 1½ seconds.

Hershey Medical Center in Hershey, Pa., has developed a medical conferencing application that integrates physician-to-physician videoconferencing, patient charts, lab results and radiology images on a single computer screen.

And students at the Medical College of Pennsylvania in Philadelphia routinely observe live surgery from the Allegheny General Hospital operating room in Pittsburgh.

Skeptics may still refer to Asychronous Transfer Mode (ATM) as "Another Telco Mistake," but hospitals across the country are discovering ATM also stands for "Aiding Telemedicine."

"ATM is an ideal service for two reasons: the transmission speeds it can support and its ability to integrate multiple traffic streams," said Michael Smith, an analyst at Datapro Information Services Group in Delran, N.J.

Smith said there are very few applications today that require ATM's giant bandwidth, but radiology has emerged as one.

Doctors cheer

Dr. Laurens V. Ackerman, professor of radiology at Rush-Presbyterian/St. Luke's Medical Center in Chicago, said he signed a contract recently to purchase an ATM switch from Fore Systems, Inc. to create an OC3, or 155M bit/sec. ATM backbone for his radiology department.

He has 40 radiology rooms that generate 2T bytes of data each year. And even 100M bit/sec. Fast Ethernet isn't fast enough for all that traffic, he said. In fact, he is already looking forward to OC12, or 633M bit/sec. ATM.

Dr. Laurens V. Ackerman *needs the speed of ATM for data traffic*

"We've been waiting for this technology," said Louis M. Humphrey, director of radiology informatics at Duke University Medical Center in Durham, N.C. "We knew about it. It waa on the horizon for several years before it came out as a commercial product." Humphrey added that ATM "hasn't disappointed us."

Humphrey has three 16-port ATM switches from Bay Networks, Inc. connecting two hospitals and a research center on the campus. An image server stores and distributes the 1,000 X-rays shot each day.

The crucial factor for Humphrey was making sure the images would appear on the PC screen in less than two seconds because studies showed that doctors wouldn't wait any longer than that. By contrast, it took about 90 seconds to download an image with the previous Ethernet-based system, so doctors were reluctant to use it.

At Hershey Medical Center, Fred Prior is involved in a variety of telemedical projects, including videoconferencing over an ATM LAN that runs at OC3 speeds.

Next month, the hospital will begin an experiment that lets radiologists guide a lab technician in another part of the campus in administering an ultrasound exam.

"ATM provides the bandwidth we need to do the type of integrated telemedicine we think is the right answer," said Prior, who is an assistant professor of radiology at Pennsylvania State University's medical school.

But delivering ATM to remote sites is still prohibitively expensive, Prior said. "The cost structure is such that we can't afford to get there or there's not enough infrastructure in place," he said.

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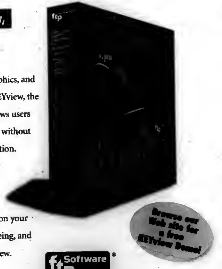

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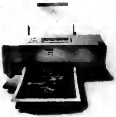


PRINT
WORLDWIDE BEARINGS
MARKET SHARE REPORT

Microsoft pushes school, Internet connection

By Gary H. Anthes
WASHINGTON

Pledging to help establish a "connected learning community" in the U.S., Microsoft Corp. Chairman Bill Gates last week said the company is developing software to enable communication between schools and homes over the Internet.

The Microsoft Parent-Teacher Connection Server, an extension of Microsoft's Windows NT Server, will help schools link parents, teachers and students througb electronic mail and school/resident electronic bulletin boards and World Wide Web sites. It also will help schools operate their own networks, according to Microsoft officials.

"In some ways, I'm an unusual person to talk about education," Gates told 700 educators and students at Georgetown University here. "I'm a college dropout, but that's not something I recommend to other people."

Microsoft said it is working with Compaq Computer Corp., Bell Atlantic Corp. and Pacific Bell to give schools a complete package of hardware, software and connectivity for the connection server. The software will be available free to schools this spring, company officials said.

Gates said Microsoft also will expand support for the Global Schoolhouse, a collection of Internet resources sponsored by the National Science Foundation. Microsoft will help develop Internet repositories for lesson plans and classroom tools, teaching standards, training courses, conferences and innovative classroom projects.

Gates and other speakers hailed the importance of information networks in education, but no one said where the money would come from to put computers, modems and telephone lines into the nation's classrooms. Most of the classrooms now lack even the most rudimentary telephone hookups.

"This is more than a budget battle, this is a question of whether or not we invest in our children's future."

— Madeleine Kunin, U.S. deputy secretary of education

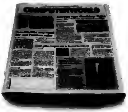
High costs anticipated

A report from the U.S. Department of Education estimates it could cost as much as $7.7 billion to put just one computer and a shared modem in each U.S. classroom and another $3.4 billion a year for support. The report said school LANs and servers with dedicated lines for Internet access could cost another $27 billion. Annual operating costs could run as high as $5 billion.

But educators shouldn't count on the deep pockets of Uncle Sam, said Madeleine Kunin, U.S. deputy secretary of education. She said President Clinton had asked for $122 million for "educational technology" for this fiscal year, but the House of Representatives approved only $25 million.

"This is more than a budget battle, this is a question of whether or not we invest in our children's future," Kunin said.

Pennsylvania Public Utility Commissioner David Rolka said connecting schools to the Internet could be financed, in part, by telecommunications carriers offering discounted rates for access, training, hardware and wiring. Such "preferences" might be offered voluntarily or could be mandated by law or state regulators, he said.



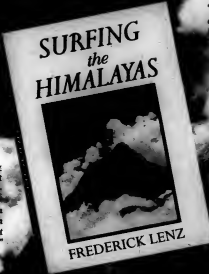
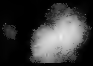


Photo: Greg Gorman



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Old guard changing chips, storage options

Users cheered by upgrades, moves to open systems

By Michael Goldberg

Several proprietary system vendors recently have come bearing gifts of technical enhancements and promised future technology for their longtime users.

Hewlett-Packard Co., Digital Equipment Corp. and Wang Laboratories, Inc. each have sent the equivalent of season's greeting cards to their installed bases.

Users cheered the news that HP will refresh the hardware in its HP 3000 server line with new chips at the high end and more storage in the midrange. Digital users cited potential performance benefits with a new version of the OpenVMS operating system for Alpha servers. And some systems managers who are still using Wang's VS computer line found new life for their shops after learning the vendor plans to release a new high-end system late next year (see chart).

Shrinking base

The worldwide installed base for Digital VMS systems should gradually decline over the next five years, by about 4% annually, according to projections from International Data Corp. There were an estimated 320,800 VAX and Alpha systems running VMS or OpenVMS at the end of last year, according to IDC.

Analysts said vendors have to give their proprietary enterprise systems periodic face-lifts or risk losing large franchises to other vendors and Unix-based boxes.

At the end of last year, for example, there were about 155,300 VMS-based systems from Digital installed in the U.S., on the VAX and newer Alpha platforms, according to International Data Corp. (IDC) in Framingham, Mass.

The HP 3000 constituency, which uses the MPE/IX operating system, is smaller but still sizable at an estimated 35,400 systems, IDC analysts said.

IDC projects that while overall sales of "open" multiuser systems will continue to grow, the number of installed proprietary systems such as Digital's OpenVMS gradually will shrink.

For this reason, Digital and HP have been nudging their proprietary systems into the world of open systems. This move is significant, said Bill Moran, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

"The vendors are trying to have these things be reborn as open systems by saying, 'No, there's no proprietary guys around here anymore.' Open 'means goodness," Moran said.

HP has sought to build interoperability features into the MPE/IX operating system so HP 3000 systems can work with Unix-based machines.

Digital has played up its efforts to make client applications that run on Microsoft Corp.'s Windows NT operating system compatible with OpenVMS servers.

Open up or else

Stephen Josselyn, a research director at IDC, agreed that the minicomputer vendors need to inject their machines with open systems features. "If Digital walked away, or sent the signal to the OpenVMS customer base that [they won't] see any more enhancements of this product line, then all of these customers have to start moving to another platform," he said.

Steve Burrell, a technology consultant at Campus America, Inc. in Knoxville, Tenn., said most of the school districts and small colleges his firm works with use OpenVMS, so he monitors Digital's actions closely

Digital's release of a 64-bit version of OpenVMS Digital "is an affirmation that there's still viability in the market for that particular operating system. OpenVMS on a 64-bit platform extends our ability to deliver highly technical applications on that platform well into the future," Burrell said.

Carol Gumpert, director of software development and support at United Artists Theatre Circuit, Inc., a cineplex chain owner in Englewood, Colo., said HP has moved in recent years to upgrade its MPE/IX technology and to keep cost parity between the HP 3000 and its Unix-based cousin, the HP 9000 server line.

HP's upgrades, which include service packages and factory-installed data bases, mean that Gumpert's shop can continue to use HP 3000 servers and Unix-based HP boxes, depending on which one is best suited to different tasks, she said.

"[The HP 3000] can't stagnate, or [users] will have to move off of it. They have to continue to invest in it to keep it viable, because times change too much," Gumpert said.

"But if they keep it moving with new developments going on, then it's something that the users can stay with and grow and still do what they need to do," she said.

Teaching old dogs new tricks

In recent weeks, vendors with long-standing proprietary systems have announced new developments

Vendor	New developments
Hewlett-Packard	Beefed up its HP 3000 line with new processors in the high-end models and increased data storage in midrange models
Digital	Will unveil a 64-bit version of its OpenVMS operating system for Alpha servers next month
Wang	Will build a CMOS chip for a high-end VS 16000 box to ship next year

Workflow takes advantage of Web

By Tim Ouellette

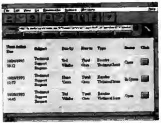
Action Technologies, Inc. this week will become the first major workflow vendor to use the World Wide Web — not for a home page, but to let users running Web browser software start up a work process or track ongoing work.

The company's Workflow Metro software will, for example, let users with Web browsers kick off customer-support requests for a company's Web page, then track where the request is in the process.

Companies with remote offices could run human resources, financial and engineering workflow applications for their employees over an intranet or internal company web.

Workflow software automates and tracks the movement of work items companywide and lets users measure the productivity of the work process.

The Metro package will come with 20 prebuilt applications targeted at customer service on the Web or corporate administration over intranets. The applications let users with Web browsers become a client for Action's workflow server.



Action Technologies' *Workflow Metro software lets users with Web browsers check the status of their work requests over the Internet*

A step forward

Analysts said the software will help companies who are trying to do similar work on their own. Analysts said this approach takes Web commerce beyond an attempt to have users punch in their credit-card numbers.

"When people talk about electronic commerce on the Web, they grab for your wallet, which is absurd because the Web isn't secure enough," said Steve Weissman, president of Kinetic Information, a Waltham, Mass., consultancy.

Instead of using the Web to get a sale and then reverting to the telephone for customer support, Action wants to accommodate the entire commercial relationship on-line, he added.

Action isn't the first company to have workflow run over the Web, however.

UES, Inc. in Dayton, Ohio, has Track-It, an add-on to its KI Shell workflow software that lets users start up workflow tasks over the Internet. Ultimus in Raleigh, N.C., and Computron Software, Inc. in Rutherford, N.J., plan to offer Web browser access to their software by early next year.

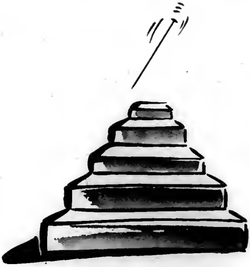
However, not everyone may consider the Web the best way to get service and support.

A recent survey by Dataquest, Inc. in San Jose, Calif., found that more than half of the information systems managers surveyed believe that even by 1997, fewer than 40% of their questions will be answered through interaction on the Web.

For the workers attached to the workflow system, a WorkBox Form provides a view of the real-time status of all their work, eliminating any need for special workflow client software beyond a typical Web browser.

Rodrigo Flores, vice president of product management at Action in Alameda, Calif., said Metro is integrated with Netscape Communications Corp.'s server software to ensure transactions between Web users and the workflow system are secure.

Action Workflow Metro is due in February. It costs $40,000 for a server license with unlimited users and another $40,000 for the 20 prebuilt applications.



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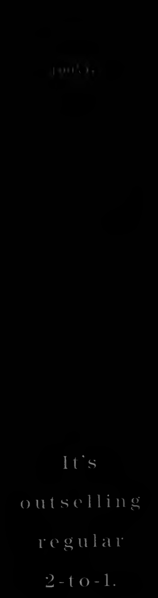
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Briefs

Client stiffs Intel

Intel Corp.'s stock fell four points early last week after a report that one of its largest customers had missed a payment estimated at $470 million. Wall Street analysts quickly pointed the finger at U.S. PC market leader **Packard Bell Electronics, Inc.**, which denied it had financial problems. Intel refused to name the customer or the amount outstanding, but it confirmed that "one of its Top 5 customers" owed it money. In what it called an "extremely unusual step," Intel said it will turn the outstanding amount into a loan secured by tangible assets of the customer in question.

Wollongong sold

Attachmate Corp. plans to acquire Wollongong Group, Inc., a maker of Internet access and TCP/IP software. Attachmate, which makes software for building intranets, plans to integrate Wollongong's Emissary Web software with its host-access offerings. No financial details were provided.

Yahoo sells stakes

Yahoo Corp. has sold minority stakes to several investors. **Reuters New-Media, Inc.** in New York bought a 2.5% share in Yahoo. Buyers of undisclosed stakes include **Open Text Corp.** in Waterloo, Ontario, **Softbank Corp.** in Tokyo and **Ziff-Davis Publishing, Inc.** in New York.

Proginet reports profits up

Proginet Corp. reported a record profit of $68,000 on revenue of $524,000 for its quarter ended Oct. 31. For the same period last year, the company had revenue of $157,000 and a $145,000 loss. Company officials attributed the results to the firm's change in focus from research and development to software sales.

IBM/Apple union trips

Kaleida shuttered; duo's partnership future questioned

By Lisa Picarille

In the 1990s, adult children often return home to live with their parents. Kaleida Labs, Inc. and Taligent, Inc., the progeny of the historic coupling of IBM and Apple Computer, Inc., are following that trend.

Kaleida, formed five years ago with great fanfare, is being dismantled The company delivered a platform-independent multimedia scripting language that failed to garner developer support to unseat market leader MacroMedia, Inc.'s Director.

Apple's Interactive Media group will get custody of Kaleida's ScriptX object-oriented multimedia scripting language

Taligent reportedly has failed to meet expectations despite hefty investments by IBM, Apple and Hewlett-Packard Co Last week, Taligent was dissolved. Half the staff will be laid off, and the technology will move to IBM Apple and HP will retain rights.

Taligent was supposed to produce a platform-independent object-oriented operating system. Two years into the project, it shifted gears and decided to make object-oriented development tools instead. That placed it in competition with Apple, which produces similar tools.

The IBM/Apple relationship seemed to split the industry — many said it made no sense; others were thrilled. The partnership's goal was to create technology that would promote the RISC architecture and aid the two companies in their battles against Microsoft Corp

Vendor alliances

Some think IBM and Apple's decision to fold Kaleida, while not of huge significance in the industry, may reflect poorly on the two companies' other joint projects. These include OpenDoc and the PowerPC initiative.

The failure of Kaleida and Taligent "calls into question any technological initiative shared by multiple firms," said Pieter Hartsook, editor of the "Hartsook Letter"

Other IBM and Apple efforts also are just plodding along. OpenDoc for the Macintosh is slightly behind schedule, and development on the Windows version has been dropped by Novell, Inc. and taken over by IBM. Even the PowerPC initiative is viewed as only moderately successful.

"The PowerPC is very successful from Apple's perspective, but the big disappointment is the degree to which IBM has stood behind the PowerPC," said Hartsook. He noted that IBM has failed to deliver OS/2 for the PowerPC. "IBM has seriously fallen down in getting its PowerPC products jump-started," he said.

But it seems the two firms have trouble agreeing on anything. "These guys at Apple and IBM couldn't make a joint decisioo in under a month," said an analyst who requested anonymity. "Each company was always jockeying for what would be best for their company, not the joint company."

Michael Braun, chief executive officer of Kaleida, said his firm was shut down because the business structure just didn't work. Admittedly disappointed, he said the decision was the right one.

"This is about the joint venture business structure," be said. "This is not about the product, oot about missing dates or about the people of the management team."

Braun said the fact that the structure didn't work wasn't for lack of trying. Apple and IBM reportedly spent more than $200 million on Kaleida.

Braun, a 21-year IBM veteran, took the helm of a listing Kaleida in 1993. That was when Nat Goldhaber stepped down amid mounting disappointment by the parent companies over ScriptX's failure to hit the market in the time frame predicted by former Apple CEO John Sculley.

Apple and IBM joint projects

POWERPC	October 1991	An initiative to create hardware platforms based on the PowerPC RISC chip architecture.	IBM and Motorola designed the PowerPC chip. Apple is the biggest PowerPC maker.
KALEIDA	October 1991	Separate company formed to create a hardware-independent multimedia scripting language.	Apple gains custody of scripting language in January. IBM still co-owner.
TALIGENT	October 1991	A separate company formed to create object-oriented development tools	Company is dissolved. IBM controls Commonpoint; Apple and HP retain rights.
OPENDOC	September 1993	A set of APIs that allows software components to move between applications and across platforms.	IBM and Apple do bulk of development. Other development team members include Lotus, Borland and Novell, all members of the OpenDoc consortium.

A Nixonian twist to Internet liability

By Mitch Betts

On-line services worried about liability for their message traffic may have to answer *the* question of the Watergate era: What did you know and when did you know it?

A federal judge ruled late last month that an Internet service provider may be partially liable for copyright infringement if it knew that the material posted on its service was unauthorized.

Netcom On-Line Communicatioo Services, Inc. in San Jose, Calif., was sued by the Church of Scientology over copyrighted religious texts that were posted oo Netcom's Usenet oews group servers by a church critic, Dennis Erlich. Netcom declined to remove the texts after receiving a request to do so from church lawyers.

Netcom called itself a "passive transmitter" of Usenet postings and argued that it can't control their content or determine whether the millions of daily messages violate copyrights. The church, however, cited 1,200 instances in which Netcom cut off subscriber accounts for offensive messages.

U.S. District Court Judge Ronald M. Whyte in San Jose said the key questioo in the ongoing case is "whether Netcom knew, or should have known, that Erlich had infringed [on the] plaintiff's copyrights following receipt of [the] plaintiff's letter." The trial will continue in January.

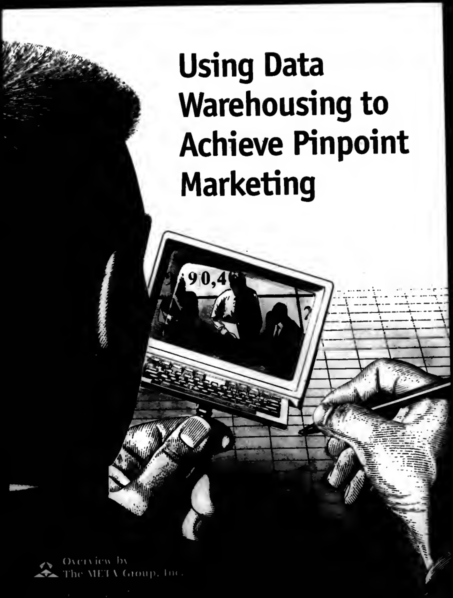
There have been conflicting rulings about liability for cyberspace messages [CW, May 29], so the issue will have to be resolved by higher courts, said Eugene Volokh, a law professor at the University of California in Los Angeles.

The ruling could have been worse for Netcom and the industry. The judge said Netcom is subject to a lesser form of liability called "cootributory infringement" — not direct copyright infringement charges. And it will be judged liable only if it acted unreasonably.

"The question for Internet access providers is this: If someone complains, did you react 'reasonably' to determine whether it was fair use or not," Volokh said.

"But 'reasonably' is the ultimate waffle word, so the next step is for the industry to figure out what that means," he said.

Using Data Warehousing to Achieve Pinpoint Marketing



Overview by
The META Group, Inc.

Interactive Data Warehousing: Providing rapid response to ever-increasing numbers of users

BY MICHAEL H. FORSTER

President, InformationCONNECT Division, Sybase, Inc.

DECISIONS, decisions. They're enough to drive us crazy at times in our personal lives. In our business lives, though, they can drive us to ruin if we make the wrong ones.

Every business decision is a moment of truth based on a complex set of data and variables. For instance:

- What have our customers been buying? What haven't they been buying? What types of incentives might induce them to buy now, not later?
- What actions are our competitors taking?
- How is the economy at large impacting buying decisions?
- How do our costs compare to the last five years?
- What are the explanations for significant variations from plan?

So many questions, so few solid answers. The answers sre usually locked up in the transactional systems that run our businesses, systems that were never designed to be queried by analysts for decision support. Only since the mid-1980s have we been extracting data from operational systems for analytical purposes using specially written COBOL programs. Those were the days of the information center, staffed by programmers who coded end-user queries and ultimately produced weekly, monthly or quarterly batch reports.

Asking questions

There's a funny thing about asking questions, though. More often than not, one question leads to another and another, and often before you actually get to the answer that you need to make a decision, you need to ask five, six or a dozen or more questions, analyzing the answer to each one before posing the next.

The emergence of client/server query tools made life a bit easier for the inquisitive analyst or decision maker. Knowledge workers could generate their own queries directly against various operational databases without the involvement of information center programmers.

On the surface, this worked fine, but the user still needed help with questions like: Where is the data I need? How is the data structured? How do I relate or join one piece of data to another? Nonetheless, things were better for the business user. This led to a growth in the number of knowledge workers querying these databases, which led to potential performance slowdowns on the transactional systems. Clearly, a better solution was needed.

Michael H Forster

Recent surveys show that more than 70% of Fortune 1000 companies have data warehousing projects budgeted or underway. The business areas most frequently addressed by these projects are database marketing, customer information systems, sales and finance.

While there is much interest and activity, the cost and time commitment to get these projects off the ground are substantial. Today it costs $3 million to design and deploy the average warehousing application, and it typically takes six to 18 months to get the application up and running.

And this is not for anything particularly fancy, mind you. Conventional warehousing applications today consist of extracting basic business data from operational systems, editing or transforming it in some fashion to ensure its accuracy and understandability, and moving it by means of custom programming or sneakernet to the newly deployed analytical database system.

This extract, edit, load, query system might be acceptable if business life were very, very simple and relatively static. But it's not. If there is a single constant in the real world, it is change. In the operational systems, changes include large volumes of new data being added, changes to existing data, new data structures in existing databases and even whole new databases being added

Today's conventional warehousing solution in the face of these ongoing changes amounts to the process described above, plus a lot of prayer that something unknown to us didn't change since the last time the process was initiated

A better idea

When Sybase unvieled the Warehouse WORKS framework last year, we knew that there was a lot more to data warehousing than moving data from OLTP to DSS repositories, and we knew that customers wanted more than a prayer-based solution to their decision support needs

We began by introducing a framework that would provide an open, flexible infrastructure upon which customers could build warehousing solutions. Warehouse WORKS was designed around four key functions

- Assembling data from multiple sources .
- Transforming data for a consistent and understandable view of the business
- Distributing data to where it is needed by business users, and
- Providing high-speed access to the data for those business users

Assembling data from multiple sources is a key issue, given the heterogeneous nature of today's large enterprise. A comprehensive architectural solution is a prerequisite to bringing data warehousing into the mainstream.

Sybase's Enterprise CONNECT family of interoperability products provides this architecture It brings a critical suite of common API and heterogeneous platform support capabilities to any data warehousing solution.

The Enterprise CONNECT architecture and its associated suite of products, installed in over 700 of the Fortune 1000, enables you to:

- Transparently access the data you need without having to understand the underlying complexities of multiple databases
- Move data to where it's needed, when it's needed, using Sybase's near-real-time replication or bulk copy capabilities
- Manage the environment, and
- Build applications with the tools of your choice (more than 125 of which have been certified to interoperate with the Sybase family of products, thus eliminating the need for you to take on the added role of systems integrator.)

Today, the average warehousing application costs $3 million to design and takes six to 18 months to get up and running.

Automation replaces prayer

Once data is accessed, it must be transformed and moved rapidly into the warehouse It is here that warehousing solutions often fall short.

Warehousing for the 21st century is about replacing the prayers I mentioned earlier with products and processes that automate the building and updating of warehouses, as well as the important process of metadata management and synchronization.

Metadata, of course, is data about the data in the operational systems. To date, little consideration has been given to what additional metadata will be needed for the warehouse. Understanding exactly what systems the data has come from, when it was extracted, when it was last refreshed, and how it has been transformed, for example, can make all the difference between a warehousing application being reliable or not.

Sybase will continue to extend its leadership in data movement and open APIs Our intent is to deliver products designed for the rigors of data warehousing and eliminate the need for prayer-based warehousing. Our new product, code-named Conveyor, will automate the rapid unloading and loading of databases, as well as the process of managing metadata. The product's purpose is to reduce the custom programming costs incurred in the implementation of warehousing applications.

Rapid response

Rapid response to end-user queries against the data warehouse database is essential. Without the kind of response that enables you to move quickly through a series of questions in order to arrive at a decision, the whole point of data warehousing is essentially moot.

Business users are an impatient bunch, and rightfully so. The window for making decisions in the marketplace is growing smaller and smaller as competition increases and product life cycles shrink.

Parallel processing is an effective solution to a number of specific bulk processing problems such as list management and batch reporting. It can also enhance response time for queries when you've got less than half as many users as processors.

And SYBASE MPP (formerly known as Navigation Server) has been designed and optimized to handle just these types of operations. SYBASE MPP harnesses the power of multiple SYBASE SQL Server engines working in parallel with a sophisticated parallel optimizer and shared catalog, with proven performance over 200GB.

Many users have found, however, that while parallel processing is certainly a powerful and important technology, it simply can't deliver the rapid response they want on its own.

In particular, when you have more users than processors, or when end users are running complex, unplanned queries against the warehouse database, even parallel processing can leave users waiting for hours . . maybe days . . with no idea of when their answers will be forthcoming. What's the answer to this dilemma?

Bit-mapped indexing

Pete Estler, the president of db-Intellect, the division of EDS that specializes in the development and implementation of marketing information warehouse solutions, answers, "The type of interactive response necessary for marketeers to do their jobs effectively can be achieved by using advanced bit-mapped indexing. That's why we've embraced SYBASE IQ as a key feature in our overall marketing and system capabilities."

SYBASE IQ is an optional extension of SYBASE SQL Server. It enables users to achieve response times on their existing hardware up to 100 times faster than a standard relational database. SYBASE IQ offers even more than this 100-fold query performance improvement. It also slashes warehouse query costs.

The result of these improvements is what I call "warehousing for the many." Imagine two systems running 64 processors. On one system, relying just on parallel processing, one user can run one query and have a result in $2^1/_2$ minutes. On the other system, however, running on the same hardware but employing SYBASE IQ, 32 users can run 32 queries and receive their answers in under a minute. Which solution would you choose for your business?

The Sybase Architecture

OPTIMIZED PRODUCTS FOR SPECIAL NEEDS

	OLTP	Data Warehousing	Mass Deployment
Database	SYBASE SQL SERVER FAMILY		
	SQL Server	SQL Server SYBASE MPP SYBASE IQ	SYBASE SQL Anywhere
Middleware	ENTERPRISE CONNECT FAMILY		
Tools	POWERBUILDER FAMILY		

Sybase offers optimized options — as well as industry-leading middleware and de-facto standard development tools — to meet your special needs.

I mentioned earlier that the fourth key component of warehousing was transformation. And in that area, Sybase has formed strategic partnerships with a number of companies specializing in this technology including Carleton, ETI, Informatica and, most recently, Prism Solutions, to fully leverage Sybase's Open APIs for more transparent warehouse administration.

In fact, Sybase has just unveiled the industry's largest data warehouse alliance program.

Key to success

In planning and deploying data warehousing applications that will serve organizations' needs into the 21st century, begin with an open and flexible architecture that enables:

- Rapid deployment of warehousing applications
- Low entry cost
- The ability to plug and play best-of-breed warehousing products, and
- The ability to begin small and grow over time.

You also need to look beyond today's piece-part warehousing offerings. The 21st century solution is an open, integrated solution that reduces the risk of failure, reduces the cost of implementation and maintenance and ensures the integrity of the data through automation of warehousing processes. The 21st century solution must also be able to respond to the decision support needs of ever increasing numbers of business users in a truly rapid, interactive fashion.

In short, it should be a solution that enables you to make the right decisions for your business.

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TECHNICAL OVERVIEW

Client/server application vendors must show their warehouse savvy

BY BARRY WILDERMAN

Program Director of Application Development, META Group

SEVERAL HUNDRED companies have delivered their first prototype or production data warehouse, often a small implementation (less than 10GB) built by end-user departments such as finance and marketing. Many large organizations pursuing data warehousing projects are also implementing client/server applications, particularly financials.

At first blush, both IT and end users can easily conclude that the basic client/server application architecture can also support a data warehouse initiative. After all, many client/server applications are implemented with merchant RDBMSs and come packaged with the sort of tools required to support data warehouses. However, there are reasons why the two initiatives must be separated:

- Because file structures in client/server applications are designed for OLTP, the underlying number of tables can be quite large (e.g., more than 700). These tables contain many coded fields, and indexing algorithms are implemented to support short, fast transactions. Access to these complex file structures is valuable only when metadata is created for the user, facilitating audit-style analysis of the transactions.
- Data warehouse-style queries often involve a series of interactive ad hoc analyses, and will dramatically interfere (particularly where full table scans are required) with the subsequent response time required for heads-down data entry (or access) in financial applications.
- Data warehouses require collecting data from disparate sources. Input data from client/server packages, therefore, should be just another source of data input to the data warehouse. Moreover, data warehouse design often involves a high degree of denormalization (aggregates, product names in a variety of tables, etc.) Database design for data warehouse initiatives, therefore, differs from OLTP-style design for client/server applications.

Most client/server application vendors are now concentrating on delivering a rich feature set, improving front-end GUIs, and achieving scalability through partitioning. By 1997, META Group believes most application vendors will routinely offer data warehouse compatibility, with consistent toolkits for both data warehouse and client/server application reporting and analysis, replication/copy management from application file structures to the data warehouse, and availability of the underlying application structures in modern CASE tools and products from leading repository vendors.

Some client/server application vendors have already made data warehouse-oriented additions to their product lines. Still, warehouse initiatives are rarely centered around the package vendor. Warehouse-focused vendors, such as Sybase, are pursuing extract technologies to incorporate data from client/server packages into their own warehouse architectures.

In preparing client/server application RFPs, IT should include a list of requirements to determine whether the package vendor can successfully interoperate with the multiple vendors required for a successful data warehouse implementation. Requirements should include:

- Materializing the underlying tables as entity-relationship diagrams in CASE and repository tools.
- Data replication/copy management from the application to the warehouse.
- Metadata replication to the data warehouse (consistent with approaches provided by Sybase partners Prism, Carleton, and ETI).
- Interoperabity with standard middleware.
- Overlapping tool sets with decision support workbenches (report writers, query tools, EIS products).

Bottom Line: As IT implements both data warehouses and client/server applications, underlying file structures must be kept separate. Application vendors must demonstrate their "data warehouse savvy" in areas like data and metadata replication, middleware interoperability, and consistent decision support toolkits.

Database marketing comes of age

In traditional marketing philosophy, the individual customer is seen as an anonymous part of a larger whole — a faceless unit in a greater statistical universe. But for companies on the leading edge of marketing, the customer is no longer just a face in the crowd.

Fueled by technological advances, companies are making great strides in what is known as one-to-one, pinpoint, target, relationship or database marketing. Businesses are forging new relationships with their customers by learning about their individual preferences . . and responding to them.

By emphasizing the individual, database marketing makes possible "pull" marketing techniques in which customers are able to let the company know what their preferences are — a more effective approach than "push" marketing, typified by large (and expensive) direct mail blitzes, cold telephone sales promotions and blanket advertising campaigns.

It's all part of a new business trend. Companies are becoming more customer-centric than business-centric, notes David Raab, president of Raab and Associates, a consulting company that tracks direct marketing technologies. "Today, companies have much more contact with the individual customer. The information gained is funneled back into large databases and then distributed out to the point of customer contact within the organization," he says.

Cost savings alone, Raab claims, make the implementation of these database marketing systems worthwhile, in fact, they will amortize a company's investment in hardware, software and implementation in a very short time. For example, targeted database marketing promotions can realize 50% to 100% higher response rates than conventional direct mail.

Having a customer-centric point of view helps a company discover what individual customers are buying, know how often they've been contacted and see which marketing

Telia gets the complete picture

When Telia, the largest Swedish telecommunications corporation, realized it was not able to provide timely information to its customers about products and services, it began its search for an open distributed architecture. Telia's legacy IBM and Unisys centralized mainframe systems lacked the flexibility to support the growth of its customer base, which was expected to soon reach 8 million customers. Also, the data residing on the mainframes was not accessible by users.

After evaluating the technologies available, Telia standardized on SYBASE SQL Servers, Open Client and HP's 9000 S/800 Servers. Telia selected Sybase and HP over Oracle and IBM due to their proven open systems leadership and connectivity solutions to heterogeneous data sources. The connectivity solutions allowed them to maximize their mainframe investment and the wide selection of integrated software tools facilitated modular application development.

"HP and Sybase have enabled us to achieve productivity savings through shorter application development times and a higher degree of flexibility in implementing new applications and support our business needs as they evolve," says Lennart Lilja, manager of technical strategies for Telia.

All Telia employees now use an integrated system that runs on PC clients, giving them an easy-to-use GUI. The new HP and Sybase system provides a complete picture of the customer as well as information about related services, prices, installation times and products — all at subsecond response times. With an estimated 8 million customers to serve, Telia couldn't afford to settle for anything less.

strategies have been most effective at the level of the individual. Unfortunately, in many corporations, the necessary data is not readily accessible and analyzable by those charged with making critical marketing decisions. It's not that the raw data isn't available. Many organizations have already made inroads on the problem of amassing large amounts of customer transaction information. The challenge is that traditional OLTP-oriented database technologies have not been able to allow marketing analysts and others to rapidly slice and dice millions of records from the desktop.

The sheer size of marketing databases can be a problem, in some instances, census data can have as many as 900 fields of information. Externally maintained marketing systems can often be saddled with a built-in six-week lag between the time a transaction occurs and the time the marketing department learns about it. Furthermore, not only does customer transaction history change constantly, but internally, the types of questions that users will want to bounce off this dynamically evolving information will change as well.

Until recently, the technology simply has not been available to handle the volumes of data and the need for rapid, flexible response and interactive analysis that marketing strategists need to mount a proper database marketing effort.

Targeted database marketing promotions can realize 50% to 100% higher response rates than conventional direct mail.

The situation is changing. IS organizations are now able to enlist the support of open, client/server-based data warehouses and flexible, fast query engines. Technological solutions are being created that allow IS to meet the demands of their users, who are grappling with this new dynamic marketplace in which the customer is king.

The technological requirements IS organizations face to implement these solutions are demanding. The database marketing system must provide rapid response so that users can interactively and iteratively analyze their information. The tools that users employ to make these analyses must be easy to work with and accessible to a broad spectrum of the organization's business units. . .perhaps even to its customers.

For many IS managers, this is a big problem. Tirey, Lochridge and Associates surveyed 27 companies with over 500GB of critical data who had attempted to set up data warehouses and database marketing systems. More than 70% of them failed in their initial efforts. In the process, these pioneers learned that creating

Warehouse lets planners do routine tasks quickly

As the fifth largest electrical utility in the U.S., Entergy Corp. supplies power to 2.5 million residential and commercial customers in Louisiana, Texas, Mississippi and Arkansas. Its facilities include fossil fuel and nuclear plants and other sites throughout the region.

Delivering information to these diverse locations isnt easy, especially when data must be accurate, timely and consistent throughout the company. To furthur complicate things, Entergy's corporate information is spread across diverse sources, such as IMS and DB2 mainframe repositories, Oracle systems and Sybase client/server applications.

In keeping with the company's overall migration toward client/server, Entergy has created a 54GB SYBASE SQL Server data warehouse on Sun SPARC Server 2000s that currently delivers financial and materials-related data to a range of corporate personnel, and will soon incorporate customer and human resources information. Initially designed to streamline the production of monthly variance reports, and to provide an ad hoc decision support environment for corporate planners, the warehouse has substantially expanded in scope to provide a foundation for data integration and delivery across multiple business systems. It also offers a sophisticated dual-level processing environment that specially prepares predefined sets of data for use in high-end decision support applications.

According to data warehouse manager Boris Bosch, the system is playing a major role in ensuring that Entergy can maintain its status as a leader in the industry. With the Sun/Sybase data warehouse, planners can do routine things quickly, which means that they have more time for complex data manipulation, the comprehensive monitoring and analysis that are necessary for success in our industry's highly competitive markets.

"The Sun/Sybase data warehouse gives top-level planners more time to work on complex tasks, and better information with which to devise competitive business strategies," says Bosch.

this kind of infrastructure is an evolutionary process, not something that can be dropped into place overnight

Alternative Approaches

There are a number of alternatives for implementing database marketing, all have their disadvantages Four of these approaches are

- **Service bureaus.** Service bureaus specialize in gathering and cleaning data and generating lists They are usually expensive, provide slow access to information and, because they operate primarily in a batch mode, offer limited query flexibility

- **Custom-designed database marketing applications.** Among their drawbacks: designs that do not accommodate multiple users with differing needs and delayed availability of transactions for analysis These systems usually require a highly structured data model that is difficult and costly to change

- **Multi-dimensional databases.** These allow fast-query response to pre-defined queries but cannot provide flexible access to detailed data, are designed more for financial analysts than marketers, and come with a high overhead, ballooning the original data to as much as 100 times its original size

- **Standard relational technology.** This technology is very flexible. But its performance for ad hoc analysis is below par and, in many cases, the data schema must be restricted to boost performance Traditional indexing technology can add significant overhead in both time and disk resources

The most viable solution to database marketing draws on the resources of the data warehouse.

Recent Solutions

The latest and most viable solution to database marketing draws on the resources of the data warehouse This approach is now being used to assemble data systematically, transform it into a consistent format for business use; distribute it where it is needed; and furnish high-speed access with popular query tools

The largest collegiate bookstore in the United States is the Harvard Coop Located in Cambridge, Mass., in the middle of Harvard Square, the Coop, as it's called (rhymes with "loop"), uses Sybase IQ (Interactive Query) to access company-wide sales data Sybase IQ incorporates brand new "bit-wise" indexing technology, designed to provide rapid response to the ad hoc analytical queries that come from off-the-shelf SQL generating query tools.

The Coop system draws data nightly from remote point-of-sale terminals into a Data General server

Stanford raises the level of its financial analysis

Stanford University, one of the nation's leading academic institutions, is comprised of seven schools: Business, Law, Medicine, Humanities and Sciences, Engineering, Earth Sciences and Education. Stanford's structure is complex and decentralized, posing a classic problem. Vast quantities of data were stored in a mainframe in a form that users found difficult to access and use.

To address this problem, Stanford has implemented a data warehouse to provide enterprise-wide decision support for end users. The data warehouse accesses information from all facets of the organization, including research, student activities, human resources, and finance.

Stanford's data warehouse runs on Sybase System 10 on a Sun Sparcstation 20 with 512MB of RAM and 25GB of disk storage. For query and reporting, the team needed a tool that provided cross-platform support, a user-driven analytical process, data pivoting, and over the long term, the capability for enterprise-wide deployment.

After evaluating several products, Stanford selected BusinessObjects from Business Objects, Inc. in Cupertino, Calif.

BusinessObjects was rolled out in November 1994. The 50 users of the system — analysts and administrators at units such as the offices of he provost and comptroller, as well as middle managers — can now do structured and ad hoc queries from their Macintoshes and PCs. The number of users is expected to increase to more than 120 by year-end.

Now, because cross-system searches and comparative reports are easy to do, more sophisticated financial analysis of the university's seven schools and many research and interdisciplinary centers is possible.

For example, users are looking at how private contributions and government funding are being used and where research dollars are going. Soon BusinessObjects will be used to understand the student population in terms of their course choices — what courses they are taking, how these choices change over time, which courses are stumbling blocks, and what resources the university can offer to help them get past these critical barriers.

← Network

which holds 15GB of data. The data is downloaded to a separate Sybase IQ server which is accessed by 35 to 40 sales managers, buyers and key managers using PCs. Eventually the system will serve nearly 100 users. The Sybase software brings performance improvements of 10 to 100 times, allowing truly interactive access to sales statistics on over 1 million SKUs.

Database marketing systems have the added complexity of needing to generate large volumes of output in the form of mailing lists, as well as enabling interactive analysis for market segmentation, predictive modeling and cluster analysis, according to Jim McIlheney, a consultant with EDS/dbIntellect, a firm that builds database marketing systems.

Because most of EDS/dbIntellect's customers, according to McIlheney, have "large problems to solve over 5 million customer names to manage, typically over 100GB of data," parallel table scan techniques are very important for producing bulk output.

Great promise

On the other hand, to satisfy the on-line access requirements, dbIntellect is evaluating the new parallel version of Sybase IQ. The software "has great promise," McIlheney says. "The query speed is tremendous, and it is accomplished without a huge hardware budget. This is a major difference between better indexing technology, like Sybase IQ, and other parallel query technology."

Sybase MPP is another tool that provides access to massive databases with hundreds of gigabytes of data. It is an open scalable database server ideally suited for use with symmetrical multiprocessor (SMP) clusters and massively parallel processor (MPP) platforms. It makes possible a truly scalable data warehouse that gives users the flexible access to information they need to make informed, timely marketing decisions.

Massive databases

Sybase MPP builds on Sybase SQL Server to provide parallel high performance for complex information analysis and mixed workloads. It features parallel load, create index, backup and recovery, and integrated administration and configuration management tools.

Chase Manhattan Bank is using Sybase MPP on an AT&T 3600 parallel system that will ultimately store 500GB of customer, transaction and credit bureau data. Chase Manhattan expects that by using this data warehouse instead of a mainframe, it will save $29 million in operational costs over five years and allow online analysis of five years of credit card data on over 6 million customers.

Tools like Sybase IQ and Sybase MPP are making the promise of database marketing a reality. In the process, businesses adopting this latest approach to customer-centric marketing are realizing additional opportunities that translate directly to bottom line profitability.

Over the long run, database marketing leads to a greater understanding of the customer, which, in turn, leads to a mutually beneficial relationship between the buyer and the seller that has not been possible until now.

ETi cuts warehouse costs

Warehouse experts estimate that up to 80% of the cost in implementing a data warehouse is spent in writing and maintaining the interface programs required to load and refresh information in the warehouse.

Significant analysis is required to determine the "database of record" for every value in the warehouse, and even then, most of the values must be transformed into a form that is meaningful to end users. Moreover, these interface programs must execute with minimal impact on the operational systems from which they draw data.

One software product can help manage this process as well as contain costs. Fortune 1000 companies worldwide, as well as public utilities and government agencies, are using the ETi-Extract Tool Suite 2— the industry's leading data productivity tool for automating data collection, transformation and migration — to drastically cut the cost of data conversion and migration for data warehouses as well as for application implementation and re-engineering.

Several of these companies use the ETi-Extract tools to build and maintain marketing-oriented warehouses. The tools enable them to use a point-and-click interface to specify the detailed instructions for searching sales, customer and product databases to retrieve the information relevant for a pinpoint marketing warehouse. Menu-driven interfaces allow users to specify business rules and transformations that need to be applied to the data. The ETi-Extract tools automatically generate and execute all of the necessary programs to populate and maintain the warehouse, as well as provide unique and powerful metadata management capabilities.

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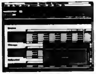

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*Source, Meta Group: 1995 Data Warehouse Survey Results.

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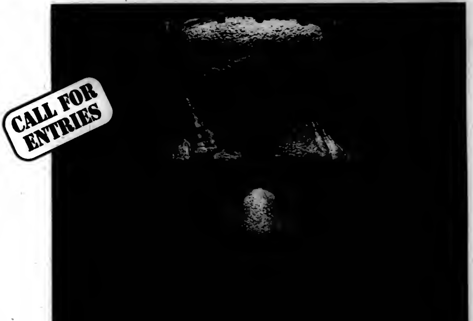
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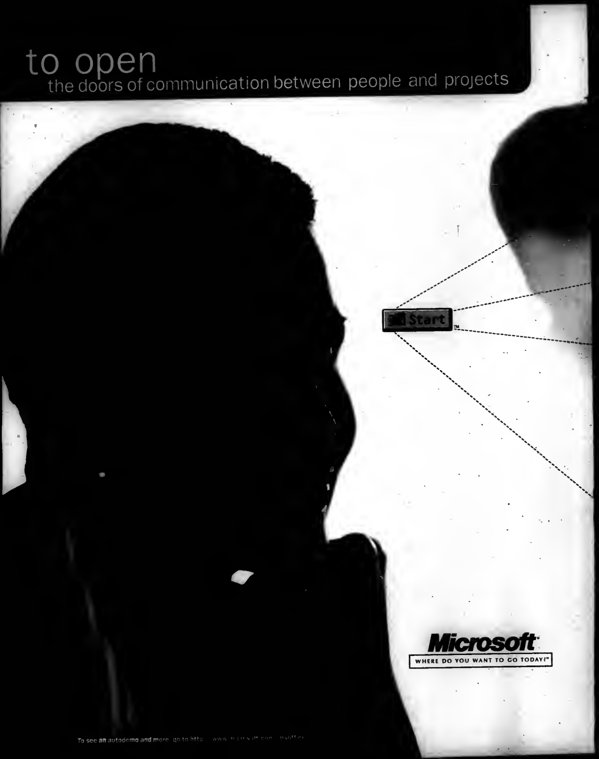

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Communication runs high, everyone con[illegible] as planned. Because it's integrated with a wide range [illegible] dule+, Microsoft Project makes it possible for the people [illegible] ct information without running into the obstacles of [illegible] e click, users can communicate task assignments [illegible] their whole workgroup can see at once. There's no [illegible] down. And by consolidating projects within the [illegible] databases via Open Database Connectivity (ODBC), you [illegible] every project in your company, from specific details to a complete and [illegible]

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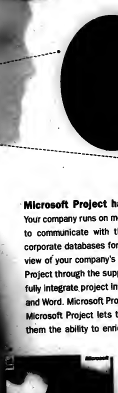

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[redacted]

Computers in toyland

Do yourself a favor this month. Round up your staff, and go see *Toy Story*. Expense the tickets. It's worth it. You will be seeing the interface of the future.

I took my kids and parents to see this Disney animation marvel over the Thanksgiving weekend and had a revelation of sorts. It came when I realized that three generations of Gillins were staring, transfixed, at the screen. All of us were relating to what was going on in our own way: The kids thought the toys really could talk; the grown-ups couldn't believe something created by a computer could look so lifelike. The animation was a cross-generational interface.

[redacted]

The technology showcased in *Toy Story* promises to attack a basic problem with computers: They're still too damned unfriendly. The vast majority of Americans still don't know how to use a computer and probably won't figure it out unless their kids teach them. Interface design hasn't progressed much since the Apple Lisa. And while Microsoft's Windows 95 is an improvement, "Start/Settings/Control Panel/Add/Remove Programs" isn't exactly the most intuitive way to get something simple done.

Software makers give lip service to usability, but they really haven't made much progress beyond windows and buttons. And it's always bugged me to hear software designers refer to customers as "brain-dead users." Can they really be serious about those customers' needs?

But progress will happen because the industry can't grow without it. *Toy Story* is more than a high-tech cartoon; it is an example of how computer-generated characters can be made approachable, even lovable. It is the pop culture version of the innovations that need to happen if computers are to spread to the masses. (To read how the movie was made, see page 53.)

Computing is increasingly driven by what consumers will buy. CD-ROMs, digital video and on-line services all have had to pass muster with home users before becoming mega-industries. The next big thing in interfaces will be computers that interact on a personal level. People will buy technology that does that the same way they're buying tickets to *Toy Story*. Go buy a ticket yourself.

Paul Gillin

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COMPUTERWORLD

"I THINK WE'RE GOING BACK TO CENTRALIZED MANAGEMENT AGAIN."

[redacted]

Kmart's webmaster wove a tangled Web page

Former Kmart webmaster Robert Fournier has demonstrated all of the class of a 10-year-old ["Kmart's webmaster gets the boot," CW, Nov. 20].

He must recognize that his former employer had given him a significant responsibility: enhancing the presence of a major corporation in a big marketing medium. It was essential that this responsibility be discharged in a professional manner.

Professionalism in the computer business is often equated with anonymity. Fournier's ego led him to create a link to a personal home page. This would have been bad enough from a business context, but his personal home page contained links to sexually explicit material.

It is a very small stretch to claim that Kmart, by being closely tied to the offending material, would be guilty of sexual harassment. Kmart had a responsibility to divorce itself from this material, even to the point of discharging Fournier.

Now, Fournier has decided to engage in petty sniping on a global stage.

Oh, now there's a clever way to find a new job in a professional capacity.

If business is to be conducted on the Web, some standards of decorum must apply. Kmart acted appropriately in enforcing policies that make sense in the business world.

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Trendy and fast is the wrong way to write systems; think about performance

I, too, am in the "over 50" group and have been an independent relational database designer for the past eight years, both in large machine and client/server environments ["Mean streets," CW, Nov. 6]. Lately, it seems everyone wants some hotshot who will quickly devise a perfectly normalized database and then slap some supertool applications generator on it to produce a fast solution. This is a bad way to write good systems. Personally, I have never designed a relational database that didn't require some degree of denormalization to run effectively with large volumes of data.

It reminds me a lot of the good old days of the early '60s when anyone with a coding pencil could extort a better-than-average income from desktop publishing managers who came primarily from the old accounting machine environment and didn't have a clue about mainframe computers.

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Two IS hiring practices conflict

"New Wave managers" and "Mean streets" [CW, Nov. 6] gave me pause because the messages are quite opposite. In "Mean streets," Mr. Cooke was looking for a new job and was shocked: "Almost no one wants you because you see the big picture. They want you only because you are good at one hot technology or another." "New Wave managers," on the other hand, counsels that a broad range of skills is needed to move up the IS career ladder. Both articles are right.

Rank-and-file IS professionals are hired to solve specific technical problems and so need specific skills. Once hired, they are encouraged to stay focused on the technical tasks, especially in these days of lean staffs. Result: They remain, become or are simply perceived to be narrow and unpromotable, leading to "broader" managers being hired from outside of IS. It's a catch-22.

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■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number; (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Marc Gunderson

We're losing our creative minds

Soon we may not be able to think, write or draw without using a silicon crutch

We are rapidly careening toward a future where the wonders of technology will give us everything we've ever asked for. Meanwhile, that same technology may take more from us than we could have ever imagined: our creative minds.

Our technological capabilities are increasing at an exponential rate, but we are becoming less able to improve or maintain our mental skills. Think of the old question about whether kids should use calculators in school. We had better look in the mirror and ask ourselves that same question before it's too late.

Software programs constantly spoon-feed us information, alleviating our need to make any mental effort. Today's word processing programs can fix our spelling mistakes on the fly.

The "wizards" and professionally designed templates in desktop publishing programs can help even the graphically impaired produce brochures that look decent.

We are becoming addicted to programs that assist us in application development, database design, music composition and drawing pretty pictures. Slowly but surely, our gray matter is experiencing an ever-diminishing mean-time-before-failure.

As we become dependent on the wizards, widgets, gadgets and gizmos that facilitate our daily chores, they tether us to the apron strings of technology. As we become enchanted with the incredible artificial things they do for us, the wizards mesmerize and pull us deeper into their clutches.

What is the cause of this unnatural, can't-live-with-it/can't-live-without-it relationship we have with technology?

We depend on it to make our lives easier and do things that are humanly impossible. We rely on it to maintain our competitive edge over the next guy. We need it to improve almost every aspect of life and economic well-being.

But with the double click of a mouse, these same advantages will homogenize our creative powers. By not being more conscious of this loss, we slowly are placing our mental and creative capacities in techno-bondage.

For the moment, we find our challenges in developing bigger, better, faster and cheaper high-tech thingamajigs. But these same whatchamacallits place us in an irreversible downward spiral toward a mental holocaust.

Soon we'll be unable to think or create without the crutch of a silicon chip. We'll all have the technological clout to make ourselves something that we aren't: artists, systems analysts, musicians or research scientists. As information technology professionals, we know what creative efforts it has taken to come this far. After all, we made it happen.

But which side of their brains will our children use when the machine can do it all?

We've fallen in love with the wondrous gifts and abilities that our technological creations shower upon us. There will be a point in this love affair in our not-so-distant future when the mechanical monsters we've created will do everything we want. Yet, at the same time they will slowly take away the most precious technology on Earth: our minds. What then Dr. Frankenstein?

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Jonina Lerner

Beta testing is much too late!

An expert on new products urges IS managers: 'Get in your vendor's face'

Everyone knows that today's software packages have grown too bulky and contain too many features that go unused. They require more hardware and create retraining nightmares. I call it the "exploding upgrade."

Developers fail to wipe the slate clean and take a truly fresh look at user requirements. More often than not, the upgrades contain incremental improvements that have been requested by power users and trade-press reviewers, who aren't a good proxy for the market at large.

Contain the explosion

As an information systems manager, you can handle the "exploding upgrade" in several ways.

There's passive resistance — postponing the upgrade or phasing it in slowly, department by department. Maybe you can switch vendors, but most users can't because they have too much money and training invested in their systems.

A better, more radical and proactive approach is to get more involved in your vendor's software development process. You may be thinking, "Well, we are beta testers." But that's not good enough. Beta testing comes too late!

Find the product managers who control the destiny of the software vital to your business

The truth is that by the time software developers get to the beta-test stage, the features are pretty well etched in stone. Shifting a vendor's internal development priorities then becomes a major battle over politics and costs. Besides, the product already is behind schedule.

By failing to do the right kind of research with customers, software vendors become convinced that cramming more features into the package will capture more users and a larger market share.

Soon, the overall design becomes unwieldy, and performance goes right down the tubes.

Two-way street

Why should vendors want to open their product development process to you? Because it's a win-win game with a lot at stake for both parties.

Only by exploring your information needs, wants, gripes and problems can vendors even hope to introduce products that are successful in the market. Vendors should want to meet with you face-to-face to understand your entire IS and business environment.

Creative technical insights and solutions shouldn't be ignored, but they should be applied in ways that can garner victory, not defeat. It involves vendors assessing how you use their product now, how you used it in the past and how you might use it in the future.

Vendors should learn how their product needs to communicate with your other systems and how they can save your business time and money and improve customer service.

But will software developers tune in to the big picture early enough in the development process to properly set the product's general direction? Well, if they don't, their product will founder. Guaranteed.

Early and often

But *you* can change that.

Get in your vendor's face early and lead them down the right path. Seek out product development managers who control the destiny of the products on which you depend. Ask to be involved in defining software requirements before beta testing. See if your company can participate in brainstorming sessions for the next release.

Remember, the squeaky wheel gets the best software. Make sure your strategic vendors hear you say: "Beta testing is too late!"

Lerner is a senior associate at Chicago-based Kuczmarski & Associates, Inc., a management consulting firm that specializes in new product development and innovation strategy.

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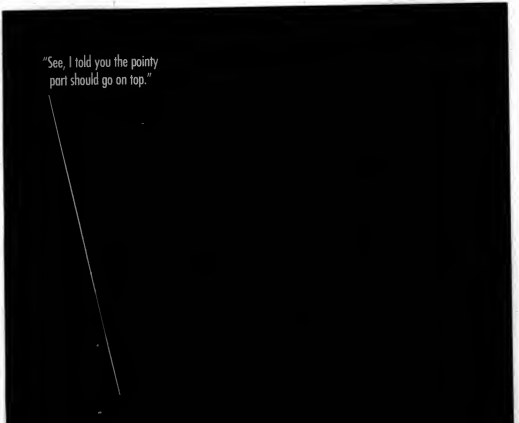

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December, 1995

Service & Support Issues in Client/Server Computing

Part 4 of a 4-part series on Enterprise Software Directions

As Featured in COMPUTERWORLD and SOFTWARE

President and CEO James H. Goodnight

Are Third Parties The Cure for Multiplatform Madness?

USAir was the Howard Johnson's of computing. The airline supported at least 28 flavors of hardware and software platforms. In short, it had everything — from first-generation IBM PCs with 8-bit 8088 microprocessors all the way up to 32-bit Pentiums.

In addition, the IS department was struggling to coordinate dozens of different systems and application software packages, including SNA, TCP/IP, Unix, DOS, Windows, OS/2, OS/2 Warp, Com Manager and a gamut of desktop products from Microsoft, Lotus Development and Borland International. Building and maintaining applications in this muddled environment was expensive and frustrating.

"The level of support or ability to provide effective support has a high correlation with the level of consistency in an implementation," says Nick Doggett, manager of technical architecture at USAir. Systems are more reliable in a consistent operating system environment and are easier to support. "With one operating system, we only need one type of technician," he notes. "If we continued with a mix, support requirements would go up dramatically."

Adds Don Neault, "USAir had a real mismatch of stuff." Neault is outsourcing director for Bell Atlantic Network Integration (BANI), which the airline recently hired to both standardize and manage its client/server computing environment.

USAir is hardly alone in its struggles to integrate a jungle of platforms from a myriad of vendors. Multiplatform and multivendor client/server computing is driving corporate technology managers to the brink of madness.

"Sun runs in one direction, Microsoft in another, HP forms an alliance with IBM, and you have a mess," says Chris Greendale, senior vice president for marketing with Cambridge Technology Partners (CTP), a consulting and education firm. Concurs Michael Bealmear, vice president of worldwide combined services at Sybase, "The non-homogeneous environment is a computer professional's worst nightmare."

The Mess Keeps Getting Messier

The number of software platforms within large organizations is exploding The average organization will have at least eight operating systems, more than three LAN operating systems, eight databases and three languages to implement client/server applications by the end of this year, according to almost 600 IT managers polled by Sentry Market Research.

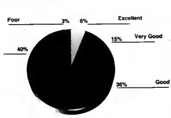
	1994	Additional platforms for 1995
Operating systems	4.9	3.9
LAN operating systems	2.9	0.5
Databases	6.3	2.0
C/S languages	2.6	0.7
Systems/network managers	2.6	1.1
Financial/HR	2.6	0.9

Source Sentry Market Research

This White Paper was produced under the direction of David R. Brousell, vice president and editorial director of Sentry Market Research. SMR, a division of Sentry Publishing Co., in Westborough, Mass., specializes in demand-side information technology research about application development, network management and systems management, and client/server computing. The editorial team for this White Paper consisted of Emily Kay, Paul Korzeniowsky and Larry Marion of Triangle Publishing Services Co. of Newton, Mass. The cover illustration is by Christopher Bing.

Integration Success Eludes IS

Few IS managers are satisfied with the level of their integration of software from a variety of vendors. When asked to assess their success the grade they give most often is "fair."



Source Sentry Market Research

Most IS managers are having bad dreams these days. According to recent surveys by Sentry Market Research, the average IS shop supports more than 22 different software platforms, including almost five operating systems, three LAN operating systems, a half dozen database management systems and almost three client/server languages. And the nightmare is getting worse. IS managers estimate that their organizations will add nine additional software platforms this year.

Why did corporate America allow such a diversity to get in the door in the first place? IT failed to stop the incoming flow of incompatible products because it had little control over what came in. By far, the bulk of client/server development has been "grassroots," coming up through business units "fed up" with long application development cycles, says Bill Herald, director of Ernst & Young's center for technology enablement. "We've been into guerrilla computing for the last five years. The Sandinistas have taken over the glass house."

In opting for what seemed the best solution, users and business unit managers rarely considered the ramifications for corporations building client/server infrastructures. "As the legal department built time-reporting systems, manufacturing built scheduling systems, and so on, organizations' development had truly become a Tower of Babel," Herald says. "There was almost no commonality and little ability to share data across the enterprise."

The proliferation of departmental applications also created huge problems for IS managers when it came to managing suppliers. IT chiefs no longer deal with a handful of mainframe vendors. A CIO at a Fortune 100 firm running client/server networks may deal with several hundred suppliers. "There's no more 'call IBM and all is saved'," says Greendale. "It used to be: Go with Oracle, HP, Visual Basic on the front end and C++. It's not that way anymore."

Far from it. A few years ago, Suburban Propane Co. faced the daunting task of integrating an IBM 3090 mainframe, NetWare, Microsoft SQL Server, Oracle, SAP's R/3 on HP 9000 Unix boxes, OS/2-based network data collection and E-mail packages, and DOS, Windows, Microsoft Office, Lotus and WordPerfect applications on Compaq and IBM PCs. In addition, 400 remote offices had PCs or LANs feeding into SAP. "We had to build interfaces from the LANs to SAP on a Unix box" and to and from the mainframe, says IS director Steven Wells.

Companies are paying the price for the backdoor entry of disparate applications and platforms. "A huge data processing budget that's not even accounted for has sprung up from customers," says Larry Bissinger, vice president of client/server marketing and sales for EDS. "Suddenly it needs to be managed because systems need to interoperate with each other."

IS dumping ground

In desperation, the CEO and CFO dumped their computing problems on IS, which "has no idea what's out there," says Neault. Outsourcing firms report that when they begin an assignment, their software census usually reveals that IS significantly underestimated the number and type of products being used.

"One customer said that they had standardized on one product for each category, and were supporting 30 products," recalls Robert Budnick, director of global solutions networkstation management for ISSC, IBM's service arm. "When we started to talk to users, we found out that there were 200 pieces of software used and support was needed."

Reducing the number of supported products is a welcome mandate from the CEO to the CIO, since it saves time and money. "If you can get two RDBMSs versus 10, three spreadsheets versus 15, three word processors versus a dozen, you'll drive support costs down significantly," says ISSC's Budnick.

Limiting an organization to a few platforms does not necessarily limit its performance. The U.S. unit of U.K. telecommunications firm Cable & Wireless standardized on Sun servers running Solaris for most of its applications, with Sybase as the DBMS, and PowerBuilder to design the applications.

"This was a conscious decision because there are too many variables when working with a range of different systems," explains Mark Razeghi, assistant vice president of IT. "Different departments are able to share data, the company develops expertise with a core set of products and programming costs are less because the company has to employ fewer experts. The only limitation is the standard tools may not be suited to a particular application. But so far, that hasn't been the case."

> Corporations are turning to third parties to solve the dilemmas of standardization.

Death knell for best-of-breed?

The move to standards — largely based on market dominance that has little to do with the technological superiority of a product — may well sound the death knell for so-called best-of-breed products. With Microsoft and Intel virtually owning the desktop, IS managers are deep-sixing their investments in anything that is not Windows. Firms doing just that to the Macintosh include Lockheed, Nike, Eli Lily, Dow Chemical, Polaroid and Ernst & Young.

It doesn't pay to deal with Macintoshes or non-Windows operating systems in client/server environments, says Richard Buchanan, founder of The Buchanan Group. "There's no more debate over OS/2, either as a server or desktop operating system. Clients are saying, 'Yes, it's a great technology, but get it out of here.' "

Standardization goes well beyond the desktop. No one SAP module may be the best, but, according to Wells of Suburban Propane, an integrated system is a better deal. PeopleSoft has a better HR product, he notes, but the costs and hassles of learning a new development environment for just one component are unacceptable. "If you want the best of breed of every subsystem, you'll spend hours evaluating payroll, accounts payable, etc.," he says. Adds BANI's Neault, "There will always be the next best widget or piece of software, but you have to live with interoperability issues a lot longer."

Best-of-breed advocates contend that their favorites can interoperate, noting that suppliers are building bulletproof interfaces to meld them into the enterprise. However, IS managers say that even if the interoperability challenges of best-of-breed ease, they are still left with excessive support and vendor management tasks. The confrontation between best-of-breed zealots and interoperability promoters is contentious and drawn out.

Corporations are turning to third parties to resolve the dilemmas of standardization. "We're hired to do what the internal organization can't do by itself — the politically difficult tasks of standardization on a few hardware and software platforms," contends Sundar Subramaniam, president of Cambridge Technology Group.

Third-party interfaces to the rescue

Third parties also are coming to the rescue of IS departments hard-pressed to build the interfaces required to link the myriad of operating systems and applications. Mixing and matching the plethora of products — developed by different companies, at different times, with different technologies — is part of most computer managers' core business strategy, but it is becoming the *raison d'etre* for consultants.

"There's always going to be something that has to be done to get these things to work together seamlessly," says Herald of Ernst & Young. Bissinger of EDS puts it another way. For corporations that do not use outside experts to establish the basic infrastructure required to manage heterogeneous environments, client/server computing is like "automating a cow path." ■

How to Navigate The Service Labyrinth

Inside a multinational petrochemical company that is halfway through a six-year implementation of SAP's R/3 suite of client/server applications, an IS veteran groans. "SAP is a nightmare, if you think about it," he says. The IS veteran says the bad dream is due not to the software itself, but the consulting costs involved in installing the scores of modules.

Spending large sums of money for specific skill sets is not a new IT phenomenon, and the mass migration to client/server is reminiscent of the scramble for consulting skills at the dawn of the IMS database revolution in the 1970s. The combination of business process re-engineering and the new IT paradigm at a time of intense global competition is driving service spending to $178 billion worldwide this year, according to International Data Corp. The overall market is growing more than 8% a year, but major implementation firms report growth rates in client/server revenues in excess of 35%.

Finding the right consultant, at the right price, with the right contract language, has never been more difficult.

IS managers seeking help

IS managers are more prone than ever to hire a third party to help them define and enforce a technology strategy, implement new systems, manage applications or outsource nonstrategic functions such as the help desk or network management. However, finding the right consultant, at the right price with the right contract language, has never been more difficult.

Criteria for selecting a consultant include technological know-how, industry/applications experience, close proximity to the client's key office, references from earlier projects, and cost. In-depth knowledge of the qualities and quirks of application development tools, databases, networking standards and products, as well as business process savvy, are hard to find in companies, let alone in individuals.

Big Six not accountable

Furthermore, the shortage of people with the right client/server technology skills wounded the reputations of established third parties such as the Big Six accounting firms, which in the past have failed to deliver some fully functional distributed systems on time and on budget. Meanwhile, fast growing client/server boutiques, including Cambridge Technology Partners and BSG, have turned into $100 million companies that are now subject to their own growing pains.

"The small companies tend to be high risk," explains Mark Razeghi, assistant vice president of IT at the U.S. division of U.K. telecommunications giant Cable & Wireless. "If a few of the consultants leave, the firm may not be able to service you. We have been most comfortable with medium-sized companies." Large firms, he notes, refuse to specify the experience level of the staff assigned to do the work.

IS managers considering a Big Six accounting firm for a consulting engagement are concerned about the "school bus" phenomenon. "Our customers do not want 20 kids dropped off from a school bus for their projects. They do not want to teach the consultants at their expense," explains Sebastian Grady, vice president for customer services at PeopleSoft. "That's why the boutiques are getting chosen over the Big Six firms."

Steve Wells, director of IS at Suburban Propane, recalls that if you contracted with a Big Six firm in early 1994, "Their people may have been in an SAP class for a month before they showed up, but they

The Price May Not Be Right

"Judging vendors with process as the primary criterion is setting the stage for disaster," warns the Gartner Group in a recent report on systems integrators. Here's how the market research firm's clients rank the criteria (from most important to least important)

- **Past relationships**
- **Industry expertise**
- **Application expertise**
- **Project management capability**
- **Price**

Source Gartner Group

were billing out at a high rate, putting junior people in and training them. We'd gone to another SAP account that was live at the time, and that's how it felt. We learned from others."

Officials at Andersen Consulting, a Big Six firm chastised for placing neophytes in client offices, contend the criticisms are ancient history. "We went to a large effort to move our skillset to client/server, making the transition to client/server as our core technology by 1993," says Hugh Ryan, partner for New Age architectures at Andersen. More than half of the firm's estimated $5 billion revenues this year are from client/server projects, he adds.

Furthermore, he claims, the rap about the hordes of untrained kids descending into client offices is inaccurate. "We do bring in young people and develop them internally because that's the best way to get consistency and reliability of service," he says. "But they go through extensive training. When we send them to engagements, it's as part of a team and leveraged with one experienced person for two less experienced people."

These days there are obvious and not-so-obvious techniques IS managers can use to weed out incompetence: Ask to see the training certificates of the lead members of the team before you sign on the dotted line. (Several firms have been burned by integrators that claimed product expertise but had done little more than open the shrinkwrap.) In addition to the usual references obtained from the consultants, Mark Factor of Au Bon Pan asks job candidates for recommendations about third parties. Pairing internal staffers with consultants, and close monitoring of tightly spaced project milestones, are other methods that reveal charlatans.

Pricing consulting services is not for the faint of heart. Industry observers estimate that the third-party implementation cost of an SAP client/server project ranges from eight to ten times the cost of the software itself. Alex Ott, SAP's vice president for strategic partnerships, contends that a multiple of three to five is more common. The cost of implementing applications from Oracle, PeopleSoft and other firms is a multiple of two to five times the price of the software, industry observers say, with vendors claiming the low end and consultants the high end of the spectrum.

SAP megaprojects

A typical non-SAP client/server project takes less than a year and carries a $1 million to $3 million price tag for external providers, according to integrators. Given the more inclusive nature of SAP projects, their costs tend to start at $10 million and hit $40 million or more for Fortune 100 size companies implementing the entire suite of 70 modules around the world. It is not uncommon to invest two to three years in these SAP megaprojects; Ott says that about one-third of the 400 SAP projects in the U.S. are in production since the products were introduced in 1993, with many new implementations going online in 100 days or less.

However, SAP recently announced a new strategy designed to reduce the implementation time and other associated costs of R/3. The plan calls for SAP or its partners to "dynamically configure" R/3 to meet specific customer requirements.

The high costs primarily reflect the scarcity of personnel. The fees of $1,500 to $2,500 per day cited by the petrochemical IS official for SAP knowledge are real. SAP's Ott acknowledges that top-level staff consultants have $1,900-per-day price tags, while Gartner Group surveys of its clients found costs at the higher end of the spectrum. Earlier this year Gartner Group analysts estimated that there were 2,000 qualified SAP programmers but demand for 3,500.

Finding angles to beat the law of supply and de-

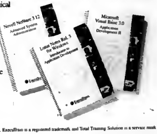

Novell NetWare 3.12
Advanced System Administration
Lotus Notes Rel. 3
for Windows
Introduction to Application Development
Microsoft
Visual Basic 3.0
Application
Development II
ExecuTrain
ExecuTrain

Figure 4

Billing Rates Are No Bargain

Managers analysts and programmers at the leading consulting and system integration firms command hefty hourly rates Furthermore rates climb about 25% for SAP expertise according to the Gartner Group

Position	Hourly Rate
Senior technology or industry specialist	$300-400
Program director (large project)	$200-300
Senior project manager (medium or large project)	$150-200
Project manager (small projects)	$125-175
Industry expert	$150-300
Systems expert	$125-200
Experienced analyst	$100-200
Experienced programmer	$75-100
Junior programmer (less than two years of experience)	$65-90

Source Gartner Group

mand is a favorite sport of IS managers engaged in SAP projects. Suburban Propane, an early SAP customer, imported technicians from as far away as Australia to circumvent shortages in the U.S. However, the most innovative cost control scheme is value pricing, a share-the-gain-and-pain approach wherein the systems integrator becomes the prime contractor responsible for the project's success.

Digital Equipment Corp.'s service unit did a deal with DirectTV, a start-up delivering television shows via home satellite dishes on a value basis. The price of the system was based on the value to the customer, rather than on a fixed price or a time plus materials basis. EDS and Andersen also will do a project for a piece of the action.

"Once we agree with the client on expectations, we base our billings on what value a client gets," says Ryan of Andersen. "If the client wants to get a 20% reduction in on-hand inventory, our system would help produce the savings, so we'd translate that to an amount. We're seeing more and more of those kind of deals, being a partner with a client on the job. We want to do more of it."

As client/server matures, however, more and more IS managers are interested in the fixed-price contract. Mark Factor of Au Bon Pain says the arrangement focuses the mind of the consultants and the internal IS staff. "A fixed-price contract drives both the vendor and us to be very attuned to what we are trying to accomplish. It makes us and the vendor do our homework upfront.

"We make it clear they lose if there's some confusion involving design or the specification," Factor adds. "We give them every opportunity to understand what we want to do and clearly state that, so if there's any ambiguity they own it. That really keeps everyone focused on getting the right thing done."

Surge in outtasking

IS managers focusing on what is really important has led to the surge of what the market research firm Dataquest calls "outtasking." Hiring a third party to run a help desk, manage a network, or perform some other non-strategic task is increasingly popular, if controversial. What could be unimportant to one company or industry could be vital to another.

Outtasking the help desk is not viewed as an automatic decision. Many IS managers say that the help desk is a direct and efficient method for monitoring the health of IT services, and should not be outtasked because third parties will never know as much about the internal environment. These IS managers further contend that third parties end up costing a client more than an internal help desk.

Chevron Canada is reconsidering the outtasking of its help desk to local consultants. "It costs a lot more for consultants, and the quality of their work is weak," says network specialist Edmund Yee. "We can train people to do that job better and less expensively."

But other IS officials say outtsking the help desk is the greatest thing since hard drives, especially if the help desk has to support mobile workers dispersed across several time zones. "We did a cost comparison and found that using a third party would cost half as much as putting together our own service team," notes Razeghi of Cable & Wireless.

The varied reactions to outtasking the help desk point to a large truth about third-party services. Knowledge and experience in the industry and the technology, relationships and project management expertise, are prerequisites for success, and are more important than price. If these criteria are lacking, Gartner Group warns, a project is doomed to failure. ☑

Commentary

Looking Ahead: A Moving Target for Services

If predicting the future was so easy, the saying goes, it would be here already. But in many ways, when it comes to client/server computing, the technological future is already here.

Distributed objects, plug-and-play vertical industry frameworks, mobile computing, and advanced data and user access technologies are all poised to play a role in the client/server implementations of the not-so-distant future. For most users, this future will arrive not when all the technological bugs have been smoothed out, but only when service providers, systems integrators, consultants and client/server vendors have figured out how to design, deliver, and maintain the next generation of client/server systems.

> This next generation of client/server systems will create a highly distributed world that can best be seen as a movable enterprise.

Service providers have their work cut out for them. This next generation of client/server systems will create a highly distributed world that can best be seen as a movable enterprise, characterized by universal accessibility on the part of the end user and universal distribution on the part of what are now called client and server components. It's a world in which any user anywhere will be able to access any system, service or application in an extended, distributed environment. And as that user switches tasks, joins a new workgroup, or moves from the office to a remote field location, the movable enterprise will move too.

Furthermore, corporations will be looking to extend the movable enterprise to their customers and suppliers. Business process re-engineering will grow from an internal process to one that includes customers and suppliers. All this means a considerable amount of re-engineering on the part of the service providers themselves.

Objects essential to integrators

Foremost in every systems integrator's plans is support for object orientation in all its manifestations: business objects that encapsulate processes and practices, object frameworks that define vertical industry infrastructures, and object-based messaging that includes network intelligence along with data and remote procedure calls.

Integrators see objects as essential to delivering distributed applications and services with a time-to-market unheard of in the 3GL and 4GL world. Delivery of product enhancements every two weeks will be in demand, and that's a natural fit to objects, says Gregson Siu, emerging technology program manager at Hewlett-Packard's Professional Services Organization.

Hardware, software and consulting firms are rapidly developing advanced object-oriented expertise. They expect that new object-oriented services will emerge along two axes: the design and delivery of object libraries and frameworks, and the development and maintenance of object-based networks.

Object libraries and frameworks are already being devel-

Joshua Greenbaum is a client/server consultant with Hurwitz Consulting Group of Newton, Mass.

Figure 1

Objects On The Client/Server Horizon

Object-oriented technology is going to play a major role in the lives of systems integrators, particularly in these six areas

- **Business objects that encapsulate processes**
- **Object frameworks that define vertical industry processes**
- **Object-based messaging**
- **Infrastructure outsourcing**
- **Business modeling**
- **One-stop help desk**

Source Sentry Market Research

oped by integrators for a variety of vertical industries. With the possibility of reusing anywhere from 40% to 95% of object code across projects or industries, these libraries and frameworks are seen as a way to reduce cost and time-to-market substantially. A component-based software development model will go a long way towards eliminating the need to ever build software from scratch again

Just a single API away

Object-based messaging is the other advantage that integrators expect to come from object orientation; In an object request broker (ORB) world, the movable enterprise is just a single API away — there will be no more protocol conversion, ad hoc data gateways, or middleware incompatibilities. Applications programmers won't have to think about the network or its resources, they'll just be objects, like everything else.

But all that built-in simplicity won't mean that service headaches will go away. With ORBs, thousands of objects will be interacting across the distributed environment. Object messaging will be a big challenge.

Object messaging requires a new level of systems management that can track and trace objects across a distributed environment, as well as manage and service the extended client/server systems that ORBs enable. Integrators and vendors are scrambling to come up with software tools that can solve these problems. For the moment, this need is woefully underserved in the market.

Systems management in general, though, is maturing to the point that infrastructure management can be outsourced, relieving the burden on IS. Once a utility service can be routinely provided, business users and their technical support staffs can focus on the more important aspects of implementing the movable enterprise.

Business modeling, already a major effort in the client/server domain, will only become more pronounced as client/server computing matures. This becomes particularly necessary as the movable enterprise expands to include customers and suppliers in the client/server environment. "The extension of the network outward is the next logical step," says Sam Starr, chief technology officer at Claremont Technology Group Inc., "We're working on services and professional activities that can help our customers."

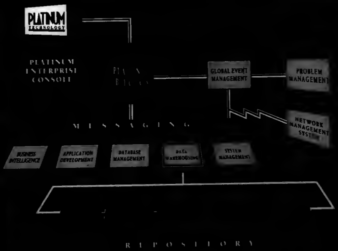
As the user base expands, services need to expand with them. With so many individual hardware and software components comprising an extended client/server environment, users are demanding that they be able to place a single help desk call and get an answer to any problem on the network.

ORBs open client/server doors

However, in a client/server world in which objects promise plug-and-play component development, ORBs promise seamless messaging, the infrastructure comes out of a wall socket and the user base includes the entire supply and demand chain, the last logical step for users is to become the systems integrators themselves. More and more of the expertise in both technology and business requirements will need to reside within the user organization.

More self reliance, backed by much more robust CD-ROM based training and on-line support services, won't be enough, of course. There's too much happening in the client/server market to go it completely alone. And regardless of how closely we can predict the future, there's bound to be new issues that cannot be predicted today.

As managing partner Hugh Ryan of Andersen Consulting says, "The number of problems will always exceed the number of solutions." When it comes to client/server computing, this is one statement that will always ring true. ■


PLATINUM
TECHNOLOGY
PLATINUM ENTERPRISE CONSOLE
GLOBAL EVENT MANAGEMENT
PROBLEM MANAGEMENT
NETWORK MANAGEMENT SYSTEM
MESSAGING
BUSINESS INTELLIGENCE
APPLICATION DEVELOPMENT
DATABASE MANAGEMENT
DATA WAREHOUSING
SYSTEM MANAGEMENT
REPOSITORY

[redacted]

ISDN connections come to the lucky

I can relate to your editorial on Integrated Services Digital Network (ISDN) ["ISDN disconnect," CW, Nov. 20]. Only, you were luckier with Nynex. From what I can tell, US West has one person in customer service who can even discuss ISDN. His name is Darrell. He doesn't return phone calls.

I have great difficulty believing the traditional telephone companies are ever going to get it.

Mike Klatman
Boulder, Colo.

Your editorial on ISDN makes a good point that without faster connections to the 'net, there will be no mass market boom. However, these connections may come sooner than you think.

The infrastructure already in place for cable TV can provide the foundation for communications with far more bandwidth than even ISDN. The new DSS digital satellite dish also is moving fast.

In less than a year in Northern California, we have gone from having no home service for ISDN to being able to sign up for it at our local computer superstore. To a large extent, Packard Bell started moving fast once Tele-Communications, Inc. gained control of most of the cable TV systems in the Bay Area and announced plans for new services.

Many firms (and so-called visionaries) missed the boom in fax machines and cellular phones. People don't want to miss out again. If Nynex doesn't get it, I am sure the next Craig McCaw will.

Mark Vernon
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I disagree with your editorial on ISDN. I called Bell South about getting an ISDN line for my home, and the company fully supported it. The price worked out to be about $215 to install it, and the monthly bill would come to $45 to $53.

Needless to say, I will be placing my order.

Roger W. Billings
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How can I become a SAP?

The Nov. 13 issue of *Computerworld* came wrapped in a bright yellow cover, drawing attention to an article inside regarding the dearth of talent in particular information systems skills categories and the resulting salary premiums ["Good help gets harder to find"].

After reading the article, I had to ask myself, "How do I become a certified SAP?" I don't remember the article ever defining what a SAP is.

I asked a dozen people in my company if they knew what a SAP was. Although several were willing to hazard a guess regarding the gullibility of a person with this qualification, it was obvious none of them knew what *Computerworld* was referring to.

Was this, perhaps, an early April Fool's edition article? If not, could you please fill me in on how to become a SAP? I feel it would set me apart from the common programmer if I could hang a SAP certificate over my desk.

Who knows, maybe my manager will become concerned and lavish a 17.1% raise on my humble self.

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Collection Group
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Give Apple credit where it's due

Well, you did it again. I'm referring to the latest effort in your ongoing gloom and doom coverage of Apple, this time in the Nov. 6 article "Copland may miss '96 boat." It states, "Apple is counting on the revamped version of the Mac OS to help boost its sagging market share by leapfrogging the technical and graphical user interface innovations adopted by Microsoft Corp.'s Windows 95."

Despite your assertions, Apple is gaining market share. Dataquest figures show we have up to 9% market share worldwide, up from 7.4%, and are No. 2 in worldwide sales behind Compaq. Our sales grew 20.5% over last year's third quarter, while IBM's grew 13.2%. Are you calling for the death of IBM's PC Division? Apple is "struggling" even though our market share is growing faster than IBM's.

And on the "technical and graphical user interface innovations" of Windows 95, those "innovations" were almost entirely adopted from the Macintosh. I'm not sure that copying qualifies as innovation.

I'm an employee of Apple, but this letter is by no means an official statement from Apple.

Doug Blair
Apple Computer, Inc.
blair6@applelink.apple.com

Regarding "Win 95 apps arrive" [CW, Nov. 13], why you think that having just one platform to chose from is best is beyond logical thinking. Here are six reasons why there are no ominous clouds over Apple.

1. Even if numbers alone are the barometer of success, the Macintosh is doing quite well, thank you: More than 20 million Macintoshes have been sold. One out of every 10 desktop PCs is a Macintosh. The U.S. Macintosh market is expected to total well over $10 billion this year — a jump of more than 30% from last year.

2. There may be few Macintosh clone vendors so far, but note that Power Computing in its first year expects to sell more computers than Compaq, Dell and Gateway 2000 combined in their first 12 months.

3. Macintosh software is more profitable and less expensive to market and support than Windows software, according to International Data Corp. The study said on average, Macintosh software generates 25% more revenue than Windows software, and development and marketing costs for Windows software are more than 50% higher.

4. When *PC/Computing* tested Windows 95 in its usability lab, novice users rated it "poor" for managing files and "unacceptable" for working with applications. *PC/Computing* said, "The carefully controlled Macintosh environment is still the usability standard."

5. Most corporate information systems managers estimate that upgrade costs for hardware and software fueled by Windows 95 will range from $500 to $1,000 per PC, not counting training. You don't have to be a bean counter to question the wisdom of an immediate switch to Windows 95.

6. This year's Apple Worldwide Developers Conference was by far the most well attended in history, with more than 4,100 people — a 30% increase over last year. Cutting-edge software will continue to be available for the Macintosh and Mac OS-compatibles.

Roger Helton
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Rmanbike@cts.com

Why is it that every article written about Apple's upcoming Copland operating system ["Copland may miss '96 boat," CW, Nov. 6] mentions Apple's demise or users who threaten to switch to one of Microsoft's Windows products?

I'm sure that when Copland ships, Apple will poorly market a great product as it has done in the past. Remember, however, that when Apple promises a distinctively new and improved Mac OS, it puts its money where its mouth is. Windows 95 turned out to be all show and no go, but I am confident this won't be the case with Copland.

Those statements by users threatening to switch to Windows if Copland ships late are hard to believe. I have never heard of a Macintosh user actually choosing to go to Windows.

Good things come to those who wait. It will be an expensive lesson for those ex-Macintosh users to switch back once they see the power of Copland.

Dan Hines
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Web a good tool for data access, retrieval and analysis system

In "Out of Office" [CW, Nov. 6], you mention the possibility of a database company doing a better job of integrating office suites with data warehouses or analysis engines. I thought I would share with you how Indiana University is trying to do it.

We recently implemented a very large client/server financial information system to run the university's statewide eight-campus system. The technology features a paperless electronic transaction system, complete with secure electronic routing and approval.

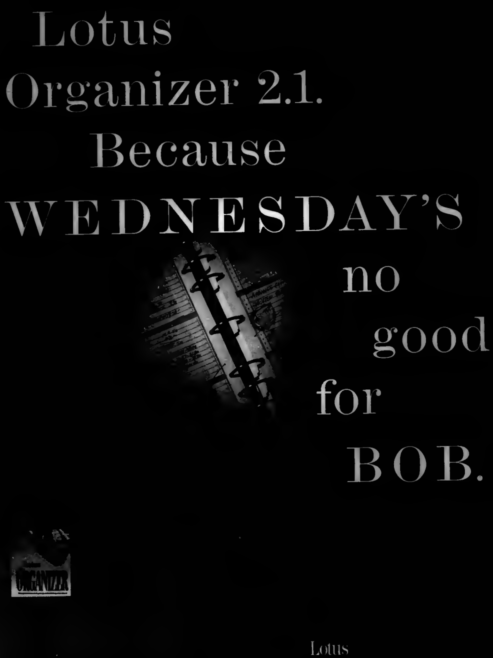
We explored all the usual front ends to our Sybase data warehouse and decided that the middleware problems associated with them were not worth the hassle. In addition, our users told us they didn't want table joining to yield the denormalized data and that the data was going to end up in a spreadsheet.

We decided to exploit the Web. We now have a comprehensive Web-based data access, retrieval and analysis system that doesn't depend on proprietary middleware. We use Microsoft's Word and Excel and Netscape's Navigator to do all our decision-support data access, analysis and reporting from our Sybase data warehouse.

Users are offered three basic services: access to electronic copies of previously written reports that are presented faithfully in Word format; access to a growing library of predesigned queries into which they merely have to enter their particular parameters; and a comprehensive forms-based ad hoc data inquiry and extraction tool set, complete with a set of the most popular data templates.

There are no version distribution problems. There are no executables. The client is the most popular Web browser, and we don't even have to worry about training users.

Barry Walsh
Associate director financial
management support
Indiana University
Bloomington, Ind.
BWalsh@indiana.edu


Lotus
Organizer 2.1.
Because
WEDNESDAY'S
no
good
for
BOB.
ORGANIZER
Lotus

MOTOROLA SPEAKS
WIN 95'S LANGUAGE, 48
SOLO SETS ITSELF APART FROM
OTHER NOTEBOOKS, 49

Desktop Computing

PCs AND SOFTWARE • PORTABLE COMPUTERS

One Up's SizeUp determines how much work is needed to port an application from one platform to another

Target audience: Corporate developers and third-party vendors who want to port applications

SizeUp for Windows 95 and SizeUp for OS/2: Gives developers a report of how many hours and API changes as well as how much recoding is necessary to port an application

Availability/price: Free via the internet (http://www.1up.com)

Macintosh and Unix versions: Due in the second quarter of 1996

SizeUp ports all

By Lisa Picarille

One Up Corp. is making it easier for developers to quickly size up how long it takes to migrate applications from one platform to another.

Analysis tools

The Dallas-based tool maker this week announced availability of SizeUp for Microsoft Corp.'s Windows 95. The free Internet service, which includes an expert system, generates a report that details the number of hours it will take to complete a migration.

SizeUp also tallies how many application programming interfaces are specific to the native software platform by prompting users to answer several questions and examining the application's source code. The service then tells users which lines of code must be changed.

One beta tester is Bill McNair, a development manager at Policy Management Systems Corp. in Columbia, S.C. The company develops client/server software for the insurance industry. McNair said the company is migrating some of its applications from OS/2 to Windows 95 and used SizeUp to determine how big the effort will be.

"We went through an analysis project a year ago. That effort took us three months. SizeUp came up with the same information in a couple of days, and the results and conclusions were pretty much the same," McNair said.

An IS manager at a large pharmaceutical company on the East Coast, who requested anonymity, said his company is moving its

SizeUp, *page 49*

LA police, in hot pursuit of system, will save $133M/year

By Jaikumar Vijayan

The Los Angeles Police Department is preparing to take a bigger "byte" out of crime.

The department has launched an ambitious computerization effort aimed at substantially reducing administrative costs and increasing the time police officers spend on the street.

When complete in mid-1996, the project will link about 1,250 Compaq Computer Corp. personal workstations and 46 servers in a wide-area network that connects each of the city's 18 police stations, four traffic divisions, the new Ahmanson Training Academy and other administrative offices.

Saving money

The LAPD estimates it will save $133 million annually through improved efficiencies with the new backbone network. It also will reduce by as much as 41% the amount of time officers push paper, said Lt. Geoff Hewlett, commanding officer of the department's systems development task force.

Despite being the nation's third-largest police force, the LAPD's 7,700 sworn officers and 2,300 administrative personnel rely on many of the same crime-fighting tools used in the days of *Dragnet*: handwritten crime reports, manual filing systems and handwritten notes.

Almost all of the criminal information the department collects, collates and stores every year is still done "either with a low-tech No. 2 pencil or a high-tech mechanical pencil," Hewlett said.

The project is being funded by a $15 million donation from the "Mayor's Alliance for a Safer L.A.," a partnership between the city of Los Angeles and several business and community leaders.

"The mission of the Mayor's Alliance was to provide technology to the LAPD and to fund only those things for which there was no public funding but which would return good efficiencies in combating crime," said Mary Odell, president of the Riordan Foundation, one of the contributors to the effort.

"If you look at the total dollar impact of the network itself ... the [return on investment] is very, very good," Hewlett said.

The following applications initially will generate the most savings in dollars and time:

- **LAPD Forms:** The LAPD's 13 most commonly used arrest and reporting forms brought on-line. The application reduces by 41%

LAPD, *page 49*

LAPD fact sheet

- **Funded by an estimated $15 million privately raised by Los Angeles area business and community leaders**
- **The goal is to have a backbone computer network that connects the city's 18 police stations, four traffic divisions and training academy**
- **The network will be made up of 1,250 workstations and 46 file servers**
- **When fully implemented by mid-1996, the project is expected to save the LAPD about $133 million per year and cut administrative time by 41%**

Virtual reality devices create a sensation

By Tim Ouellette

Virtual reality is getting more real every day.

A Cambridge, Mass., firm recently created a device that lets users add the sense of touch to the sights and sounds already experienced in a virtual reality environment.

SensAble Devices, Inc.'s Phantom A is made up of a small robotic arm with a finger thimble that can be attached to the user's finger. The device tracks the user's finger movements and applies the corresponding pressure when the user touches a computer-generated object.

Users can differentiate between smooth spheres, flat walls, sharp corners, friction and even various textures. A two-finger option for the finger and opposing thumb is available so users can pick up computer-generated objects, according to Bill Aulet, president of SensAble Devices.

Similar systems were tested in larger, expensive configurations at a few locations, but SensAble Devices has made the Phantom A compatible with a typical desktop PC or Silicon Graphics, Inc. workstation. The device is small enough to fit beside those machines.

The system costs $19,500, and Aulet said the price is expected to drop. However, the system doesn't include the costs of developing the software and simulations. Development software for three-dimensional simulations can cost about $40,000 for higher-end projects. By comparison, a simple PC-based, low-end 3-D authoring package for animations and illustrations from Ray Dream, Inc. in Mountain View, Calif., costs $300.

Airbus Industrie's *walkthrough demonstration was completed in less than three months using Sens8 Corp.'s World Toolkit*

Aulet said several companies use Phantom A to create better human-to-computer interfaces. The device also can be used to simulate surgeries and train workers for complex tasks.

And some businesses aren't just taking virtual reality for a test drive.

Ford Motor Co. recently opened a virtual reality lab to develop tools for engineering design and evaluation applications. For example, using Division, Inc.'s authoring software, virtual reality will be used with proposed car dashboard configurations to check instrument accessibility and visibility.

Airbus Industrie, a large European aircraft manufacturer, has designed a virtual reality walkthrough demonstration of its new aircraft interior designs.

IBM revamps its PC service strategy

Company will collaborate with third-party vendors

By Jaikumar Vijayan

IBM will team up with resellers and other channel partners to deliver its PC desktop and server-related products and services in the future.

IBM's worldwide sales and service organizations will join with third-party vendors to offer services such as PC product procurement, order fulfillment and configuration, customization and installation services.

At your service

IBM and its resellers have joined forces to deliver the following PC-related products and services:

- Product procurement
- Order fulfillment
- Configuration services, including software preload, testing, integration and customization
- Initial installation services

The new delivery strategy is expected to substantially broaden the support skills available to IBM customers and reduce the amount of time customers must wait for a response when they call for service.

IBM's plan "will probably also mean reduced service costs," said John Dunkle, president of Workgroup Strategic Services, Inc. in Portsmouth, N.H.

IBM's internal support costs will be reduced because the company will share support functions with other vendors, Dunkle said. IBM said the move will give nsers "the best value" in the services area.

"It is an excellent thing for users. Now we have two partners — IBM and their service vendors — working in concert to service the problem instead of fighting for the same service revenue in froot of the customer," said Sam Albert, president of Sam Albert Associates, Inc. in Scarsdale, N.Y.

IBM's channel strategy substantially diminishes the role of the company's PC Direct mail order service and other direct telephone sales efforts. Once customer leads are qualified, IBM's channel partners will fulfill the orders.

Good move

Users reacted to the new delivery strategy with muted enthusiasm but agreed it was a step in the right direction.

"Considering we bought stuff through PC Direct in the past and had nothing but trouble, [we] hope this time that this [strategy] is better," said Lloyd Blauen, a Unix LAN administrator at USAir in Arlington, Va.

Blauen said he has encountered problems with delayed delivery schedules and product reliability when dealing with PC Direct.

"I think it is a good move if IBM [wants to] stay profitable and compete in this business," said Eric Libow, services manager of the PC LAN group at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla.

"It is kind of hard for a company to offer all these services on its own and still remain profitable," he said.

This is IBM's second major service and support announcement this year.

The company in March formally launcbed NetWorkstation Management, a global PC support program that is aimed at life cycle management of a corporation's distributed computing assets.

Analysts say consolidating on its strong service and support infrastructure will be key to IBM's efforts to arrest its recent decline in the PC business.

IBM ranks fourth in the U.S. PC market behind Apple Computer, Inc., Packard Bell Electronics, Inc. and Compaq Computer Corp., according to third-quarter figures from International Data Corp. in Framingham, Mass.

Dell to make house calls

Direct marketing PC maker Dell Computer Corp. in Austin, Texas, will offer on-site services for customers of its recently announced quad-processor servers.

When customers order Dell's PowerEdge XL servers, a networking engineer from Dell's service partner, Digital Equipment Corp., will go to the customer site and validate the order to make sure every part is functional and in line with what the customer ordered.

The company also will offer a fee-based, file server installation service option.

Under this plan, Dell's service representative will go to customer sites and help set up, install, configure and test a new file server. The service will cost $999.

The company initially will promote these services only on its high-end PowerEdge XL servers, a spokesman said. But Dell eventually could extend the services to other servers, the spokesman said.

—Jaikumar Vijayan

Briefs

Motorola introduces Montana PC card

Motorola, Inc. in Schaumburg, Ill., has announced a combination 28.8K bit/sec. data/fax modem PC Card with cellular connectivity and one-way and two-way wireless messaging capabilities. Montana was designed for mobile users who seek remote access to corporate networks, electronic mail and the Internet. Montana joins the recently released Mariner in Motorola's family of PC Cards with multiple wireline and wireless capabilities. The card will cost $329.

FileNet can fix faulty software package

FileNet Corp.'s WorkForce Desktop 4.1, PC-based document management software, may not work with networks running Novell, Inc.'s LAN Workplace for DOS 4.12 TCP/IP protocol stack. It may also inhibit access to the network. A fix is available at the Costa Mesa, Calif., firm's World Wide Web site (http://www.filenet.com).

U.S. Robotics earnings soar

U.S. Robotics Corp., the Skokie, Ill., maker of high-speed modems, remote communications servers and mobile computer products, recently reported record fourth-quarter sales and earnings. Revenue for the company's fourth quarter was $293.4 million, an increase of $161.5 million, or 123%, over the $131.9 million for the same quarter of the previous year. Net earning for the fourth quarter of fiscal 1995 were $34.2 million compared with $5.4 million for the same quarter of fiscal 1994.

MobileNurse developed

Summit Health, RAM Mobile Data USA L.P. and Oracle Corp. have teamed up to launch MobileNurse, a wireless, laptop field information system for home health care professionals.

Delrina's fax software lives up to users' expectations

By Cheryl Gerber

Beta testers and users said last week that the Windows 95 version of Delrina Corp.'s leading fax software has delivered what the company promised.

Symantec Corp.'s acquisition of Delrina was contingent on Delrina's shipping a fully featured and functioning 32-bit version of WinFax Pro by this month, executives acknowledged last week.

Fax software

The 32-bit WinFax Pro 7.0 includes approximately 100 oew features — including integration with Microsoft Corp.'s Exchange and OLE 2.0.

Steady performance

The new version also delivers more reliable faxing on both the sending and receiving side than the previous version, according to Jim Gunn, president of Sterling Consulting in Salt Lake City and a beta tester.

"I've been using it every day" since August, Gunn said, and "I have not had one incoming or outgoing failure.

"When the lines aren't working right, it still handles faxing rock solid," he added.

Gunn said he has made good use of the product's ability to save on telephone bills by batching faxes and scheduling them to be sent at off-peak hours.

The new version also transmits faxes faster.

Another beta tester said the fax software has effectively taken advantage of Windows 95 through the ability to multitask.

"The ability for WinFax to multitask — to be faxing in the background — is a big advantage," said Jim Dunagan, database manager at WNTQ, a radio station in Syracuse, N.Y.

WinFax Pro 7.0 also makes use of Microsoft's Telephony Application Programming Interface.

"There are real advancements in computer telephony integration in this version. You can use your modem and hard drive as a voice answering system in conjunction with your fax," said Peter Davidson, president of Davidson Consulting in Burbank, Calif.

Faxing at your fingertips

A feature called TalkWorks Fax on Demand can be set up to call for information and select from a list of stored documents that can be automatically faxed to the caller.

It may require some knowledge of the software, however, to configure a mailbox for Fax on Demand services, Davidson said.

Dunagan said one the most nseful new features in WinFax Pro 7.0 is the CommBar. This configurable, drag-and-drop utility launches events and provides the status of all communication from the desktop.

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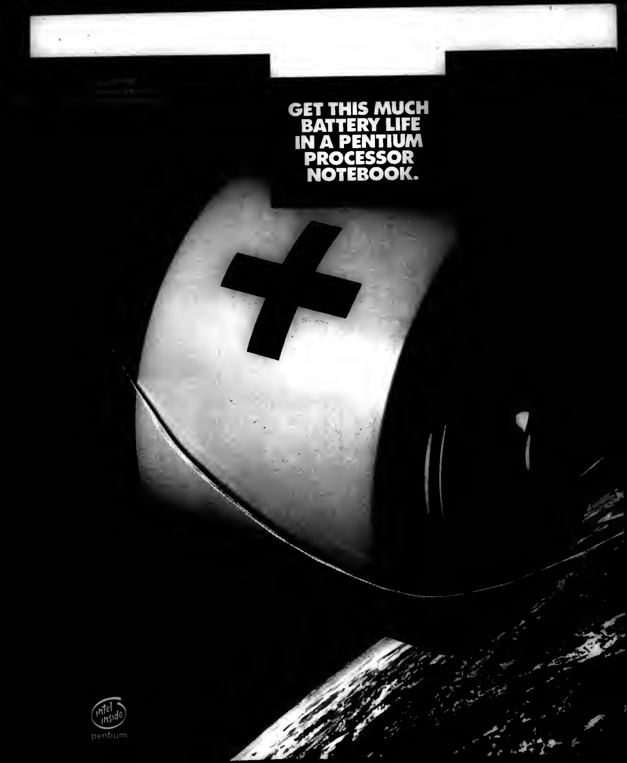

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Motorola speaks Win 95's language

Lexicus division enters Chinese language market

By Jon Skillings
LAS VEGAS

In anticipation of the arrival of Microsoft Corp.'s Windows 95 on Asian shores, a pair of vendors unveiled Chinese language software products at the Comdex trade show here recently.

> "In China, keyboards are really cumbersome. [The new software] will make computing a lot more accessible."
>
> *Wako Takayama, Motorola's Lexicus division*

Motorola, Inc.'s Lexicus division introduced its LexiPeo handwriting-recognition application, which allows users to enter any of the more than 13,000 Chinese language characters into Windows 95 applications. With a stylus, users can write in longhand in both the traditional and simplified Chinese character sets.

"In China, keyboards are really cumbersome," said Wako Takayama, marketing manager at the Lexicua division in Palo Alto, Calif. The software "will make computing a lot more accessible" in Chinese language markets, she said.

The Motorola software has an accuracy rate of better than 95%, Takayama said. It takes up approximately 4M bytes of memory, or about half that if only one character set is installed.

Evaluation copies will be available next month, and delivery is planned for the first quarter of 1996. Pricing hasn't been set.

Windows 95 arrived in Taiwan on Nov 28 and is scheduled to arrive in mainland China by the end of the year.

Motorola has no plans to offer similar handwriting-recognition software for other languages, such as Arabic or Cyrillic, that don't use the Latin alphabet.

Meanwhile, Twin-Bridge Software Corp. in Monterey Park, Calif., showed off its line of software for typing Asian characters into Windows 95 applications. The Chinese Partner and Japanese Partner applications let users enter Asian characters into Windows 95 applications to produce bilingual or multilingual documents. Input is accomplished via on-screen representations of keyboards.

Pricing and availability information wasn't available.

Skillings writes for the IDG News Service

Interactive Media's *KanguruDisk*

Interactive Media Corp. has introduced KanguruDisk.

According to the Holliston, Mass., company, KanguruDisk is a removable plug-and-play storage device that stores up to 1.6G bytes. It functions as a personal, portable hard disk that lets users transport and plug in applications and files to the computer they are working on.

It is available in internal and external versions. The internal version includes a portable disk and an internal dock that installs into a PC's 5¼-in. bay, the same type of bay that houses floppy disk drives. The user connects cables to the existing internal hard drive and to the integrated drive electronics controller. The external version has a portable disk and an external dock that connects to a PC's printer port.

Pricing for the internal KanguruDisk starts at $66. Pricing for the external KanguruDisk starts at $85.

▶ *Interactive Media*
(508) 429-9070

AlphaBlox U.S., Inc. has introduced OfficeBlox, an application suite.

OfficeBlox consists of NoteBlox, CalcBlox, ListBlox and ToolBlox. According to the Burlington, Mass., company, the suite lets users split applications into functional component parts and use the resulting component programs as building blocks.

The Blox applications were designed as both Microsoft Corp. OLE servers and containers. Each Blox can run as a stand-alone application and can be dragged and dropped within other applications as OLE components.

ListBlox can contain spreadsheets, drawings and video files or can be embedded into a program. NoteBlox is a tool for creating notes, messages, memos and annotations that can be placed in any Microsoft Windows 95 application, including other Blox apps. CalcBlox is an on-screen programmable calculator that lets users create calculations without building a spreadsheet. ToolBlox lets users pull together all Blox apps into a floating, customizable tool bar. It lets users drag Blox apps, OLE objects and templates or run a Windows application through the tool bar.

OfficeBlox costs $70.

▶ *AlphaBlox U.S.*
(617) 229-2924

Seiko Instruments USA, Inc. has introduced Smart Business Card Reader.

According to the San Jose, Calif., company, the product is a business-card scanner with 400 dot/in. resolution in 8-bit grayscale. The character recognition technology was designed specifically for the small format of business cards and can process up to four cards per minute.

The reader lets users insert a card into the top of the reader, press a button and scan the cards. It reads the card in either landscape or portrait format and places the data into appropriate name, address and telephone number fields. Users can then view an image of the card or review the contacts in database form or as a list. Annotations made on the cards are also scanned in, and searches can be made based on these notes. Contact lists can be printed in address book, phone book or label format.

Smart Business Card Reader was designed to work with most popular contact management programs. It costs $299.

▶ *Seiko Instruments USA*
(408) 922-5800

Trippe Lite has introduced BC Personal 200 UPS, an uninterruptible power supply (UPS) product for small office and home office environments.

According to the Chicago company, BC Personal 200 UPS features quality surge, spike and line noise filtering for clean AC power. It was designed to transfer to 120V battery power during low- and high-voltage conditions.

Pricing for BC Personal 200 UPS starts at $119.

▶ *Trippe Lite*
(312) 755-5400

LG Electronics U.S.A., Inc. has introduced Goldstar Model GCD-R560B, a six-speed CD-ROM drive.

According to the Englewood Cliffs, N.J., company, the CD-ROM drive was designed for graphics- and video-intensive multimedia software and provides a data transfer rate of 900K byte/sec.

Goldstar Model 6CD-R560B features Play, Skip and Stop controls on the front and supports multisession photo CDs. It is Microsoft Corp. Windows 95 plug-and-play-compatible and IBM OS/2 Warp-compatible.

The six-speed CD-ROM drive costs $300.

▶ *LG Electronics U.S.A.*
(201) 816-2000

U.S. Robotics, Inc. has unveiled the Sportster fax/modem line of products.

According to the Skokie, Ill., company, Sportster modems are plug-and-play products that include Internet connection kits, on-line service offers and U.S. Robotics' QuickLink software. The full Sportster line will automatically configure when used with Microsoft Corp.'s Windows 95.

The product line includes a 14.4M bit/sec. data/fax internal modem for $129, a 14.4M bit/sec. data/fax external modem for $149, a 28.8M bit/sec. data/fax internal modem for $249 and a 28.8M bit/sec. fax/data external modem for $279.

▶ *U.S. Robotics*
(708) 982-5010

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- 23. Dir./Mgr. Sys. Development, Sys. Architecture
- 31 Programming Management, Software Developers
- 41 Engineering, Scientific, R&D, Tech. Mgr
- 60 Sys. Integrators/VARs/Consulting Mgr

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- 12. Vice President, Asst. VP
- 13. Treasurer, Controller, Financial Officer

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- 70 Medical, Legal, Accounting Mgr

OTHER PROFESSIONAL MANAGEMENT
- 80 Information Centers/Libraries, Educators, Journalists, Students
- 95. Other Titled Personnel

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Operating Systems
- (a) Solaris
- (b) Netware
- (c) OS/2
- (d) Unix
- (e) Mac OS
- (f) Windows NT
- (g) Windows
- (h) NeXTstep

App. Development Products ☐ Yes ☐ No

Networking Products ☐ Yes ☐ No

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- 60 Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/ Transportation
- 70. Mining/Construction/Petroleum/Refining/Agric.
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./ Retailer
- 95 Other ______ (Please Specify)

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- 23. Dir./Mgr. Sys. Development, Sys. Architecture
- 31 Programming Management, Software Developers
- 41 Engineering, Scientific, R&D, Tech. Mgr
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OTHER PROFESSIONAL MANAGEMENT
- 80 Information Centers/Libraries, Educators, Journalists, Students
- 95. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
- (a) Solaris
- (b) Netware
- (c) OS/2
- (d) Unix
- (e) Mac OS
- (f) Windows NT
- (g) Windows
- (h) NeXTstep

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Gateway 2000's Solo sets itself apart from rest of notebook pack

Lightweight multimedia portable packs a punch; platform's only weaknesses are result of quirks in Windows 95

By Jeffrey Gordon Angus

Gateway 2000, Inc.'s Solo S90 notebook is riding the crest of an expected wave of notebooks designed for Microsoft Corp.'s Windows 95. It is a high-muscle 90-MHz Intel Corp. Pentium lightweight notebook that is loaded with software and some exceptional hardware.

But on the downside are some early Windows 95 inconveniences and a manufacturing weakness that makes the keys pop off.

Solo S90
Gateway 2000
North Sioux City, S.D.

Display: 10.4-in. Super VGA (800 by 600 dot/in.)

CPU: 90-MHz Intel Pentium

Hard drive: 720M bytes

RAM: 16M bytes (expandable to 40M bytes)

Peripherals: 3.5-in. modular disk drive, modular CD-ROM drive

Software: Microsoft's Windows 95 and Office 95, Professional Edition

Weight: 5.6 pounds (base weight)

Price: $5,199

Hardware

The key parts of any notebook are the keyboard and screen. I/O devices that make the operator effective will do more to boost productivity than will improvements in CPU or disk speed.

The 10.4-in. Super VGA screen is outstanding; images are crisp and visible from a wide range of angles with excellent color. The video supports 256 colors in 640- by 480-pixel resolution and 800 by 600 dot/in. It doesn't support 64,000 colors, which seems like a shortfall for a multimedia computer, but the machine actually helps overcome this disadvantage.

Normally, you would develop multimedia presentations on a desktop machine and transfer them to the notebook, and a developer could assume you had 64,000 colors.

Notebooks

But this unit is powerful enough to be a development platform itself, erasing that problem.

We developed a pair of media-intensive presentations on the machine, and it provided more than enough performance.

Mixed features

The keyboard was better than adequate but not outstanding. The feel has a very shallow "give."

The case extends below the keyboard to accommodate the pointing device. The extended case provides wrist support, which can help users avoid repetitive motion injuries, but it will benefit users with larger hands most because the reach to the keys becomes longer.

The pointing device, an Alps Glide Point, is an intelligent touch pad that adjusts itself to accommodate the cursor's proximity to edges.

You won't "run out of room" on the pad when trying to go from one end of the screen to the other. For users who aren't experienced with this technology, it will take some getting used to.

As what Gateway is promoting as the first high-end Windows 95 notebook, Solo comes with Windows 95 preloaded and has special keys that are used to launch the Start button and bring up a right-click menu.

We found a manufacturing flaw in the keyboard. The right-arrow key flipped off its rails on the second day of intensive use.

Some adjacent keys started popping out soon after that.

The mechanism that supports the keys is complex enough that novice users won't be able to replace the keys, but a semiskilled technician can. Gateway officials said they hadn't encountered this problem.

Except for the keyboard problem, Solo shows very good workmanship. The usual clues of good engineering in a laptop are how easily removable parts fit and how easily doors and the lid open and close.

In all cases, the Gateway product showed skilled design and rendering.

Even PCMCIA cards have an above-average connection path, which allows for smooth installation and removal.

Solo is lighter than competitive multimedia units because you can install a 2X CD-ROM drive or floppy drive but not both. It is quick and easy to swap the drives.

The 90-MHz processor and 16M bytes of RAM were capable of eating alive anything we put on the machine, including media-intensive applications. Windows 95 hogs such as Microsoft's Word and Excel process very quickly on Solo.

If you are presenting to an audience of more than two people, you will want to take along more powerful speakers than the built-in pair.

The resident ones are adequate for the unambitious or for a single user watching a multimedia presentation, but the built-in sound capability (Sound Blaster emulation, Musical Instrument Digital Interface, CD Audio playback) can produce higher-quality sound at a higher volume than the standard speakers can provide.

Except for the keyboard problem, the Gateway 2000 product showed skilled design and rendering

Software

Solo comes with a ton of bundled software on its 720M-byte drive. Besides Microsoft's Windows 95 and Office 95, there are a lot of small applications, including Franklin Quest's Ascend personal datebook program; utilities from Corel Corp.; and the OAG Flight Guide.

Smaller additions include a CD Audio player and a serial "network" for communicating with desktop machines. Most users won't need anything more.

This first version of Windows 95 has created some irritations. On start-up, it repeatedly believed the hardware configuration had changed and needed to be rebooted. It didn't.

And Windows 95 lost track of the built-in sound card driver and needed to reidentify it periodically.

Testing indicates these are more likely Windows 95's shortcomings than Gateway's, but this is the operating system the notebook comes with.

Solo is the first hot, high-end, lightweight multimedia portable notebook. It makes a great multimedia platform for users who are willing to put up with a few quirks in exchange for a lot of muscle and convenience.

Angus is a freelance writer in Seattle.

SizeUp

CONTINUED FROM PAGE 43

OS/2 applications to Windows 95. He said SizeUp eased that decision by precisely estimating the scope of the porting process.

Once users have received their SizeUp results, they have two options.

They can port applications themselves or, for a price, they can send the results to One Up, which can use its own tools to migrate the user's applications.

Users can also purchase these migration tools, such as Smart-Tools, which could further reduce the migration effort by automatically performing the bulk of the conversion for the developer.

Benefits found

One user said SizeUp was very beneficial because previous migration efforts were underestimated.

Bridget O'Flaherty is development program lead at Systems Integrators, Inc., a Sacramento, Calif., company that specializes in developing custom newspaper and publishing applications.

O'Flaherty said her company used SizeUp to analyze migrating its MTX newspaper editing program from OS/2 to Microsoft's Windows 95 and Windows NT.

"Just moving our product from OS/2 1.0, the 16-bit version, to OS/2 2.D, the 32-bit version, which was considered a mechanical upgrade, took two [years] with eight people working on it. That was more time than we originally anticipated," D'Flaherty said.

"Now that we are looking to move from OS/2 to Windows, and have a product with more than 1 million lines of code, we have a more accurate estimation of time and man power," she said.

Because Systems Integrators is in the middle of the migration process, it is still too early to tell if SizeUp's prediction that the job would take 27,000 hours is accurate.

LAPD

CONTINUED FROM PAGE 43

the time officers spend filling out paperwork associated with an arrest, meaning they can spend more time on the streets.

- **Detective Case Management:** A case-tracking application that allows LAPD personnel to track key information associated with a criminal investigation, including witness/suspect data. Most such information was previously stored in folders.
- **NECS/CLETS Connect:** Provides on-line access to criminal data stored on the city's Network Communications System and the state's California Law Enforcement Telecommunications System (CLETS).

CLETS connects every police station in the state and provides a gateway to national criminal databases.

- **Westlaw:** A reference application that gives officers and detectives immediate access to the California penal code.

More features

Other applications include electronic mail, computerized phone directories, on-line versions of the department's operations manual and fingerprint information.

Initial implementation of the hardware has already begun and will roll out at the rate of three police stations every month, Hewlett said.

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'Cuz honey,
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See, I had a chance like that once, long before there were any computers, and big Fortune 500 companies were even usin' processors like that quick little MIPS RISC thing.

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'Howdy miss,' he said, 'I'm sure you're aware of this new refreshment that's sweepin' the south.' Then he held up that bottle.

'Well,' he went on, 'we're lookin' for investors, 'cause we want to expand.'

Then I said, 'Mister, I sure do like your drink, but tryin' new things like that really isn't in my nature.'

'Suit yourself', he says, tips his hat, and walks away.

Now, I don't have to tell you what soda pop that young fella was talkin' about, do I?

So when I heard NEC's 250 MHz V_R4400™ runs Windows NT up to three times faster than that 100 MHz Pentium processor, I wanted to hear more.

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So I sat here thinkin', if things were different, and I was one of those stressed-out computer executives, I'd say to myself, here's a chance to make my mark, just like I coulda' done almost a lifetime ago.

Well, that's my story, thanks for listenin'. Darn! I wish I had the time to tell ya' about all the companies makin' those MIPS-based systems. You better give those folks at NEC a call at 1-800-366-9782 and ask for Info Pack #185. That'll get you started.

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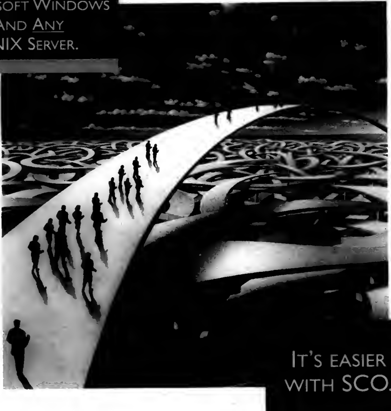

MICROSOFT TARDY WITH IN-HOUSE EXCHANGE, 57
NEW PRODUCTS, 64

OS/2 SystemView has its limits

Network integration package supports workgroups for users in IBM camp

By Patrick Dryden

IBM was preaching to the choir when it launched the OS/2 version of the SystemView suite of integrated network, systems and applications management tools at Comdex/Fall '95.

Analysts said SystemView for OS/2 will appeal mainly to users already committed to IBM products. The package combines a set of IBM programs for managing OS/2 desktops and servers, Windows desktops and Novell, Inc. NetWare servers. They credited IBM for delivering the workgroup platform on schedule but faulted the OS/2 incarnation for falling short of the full management functionality promised for the SystemView series (see chart, bottom right).

Managing networks

SystemView for OS/2 recently began shipping at an attractive $499. It supports workgroups of up to a few hundred users that don't require tight integration with SystemView for AIX, available now; SystemView for MVS, coming next month; or other enterprise-level management systems.

This SystemView version combines IBM's NetFinity server monitor, remote controls and diagnostics, performance monitors, and a software inventory dictionary of 3,000 titles, officials said.

IBM will include this suite in OS/2 Warp Server, the LAN Server upgrade currently in beta testing for release early next year.

That combination appeals to Josiah Airall, a systems analyst at Cincinnati Bell Information Systems, which has beta-tested both packages.

The telecommunications billing services provider will migrate many of the 100 servers in departments throughout its 2,300-user network from LAN Server to Warp Server, Airall said. The company will also move NetView and other IBM management tools now on MVS and AIX to its SystemView incarnation.

Such IBM shops already know OS/2, NetFinity and other tools, so support staff won't have training delays when shifting to SystemView for OS/2, said Roosevelt Giles, president of Information Management Systems, Inc., an integrator in Atlanta.

"This tool will interest a few of my clients who prefer OS/2, LAN Server and the AS/400 for small to medium sites," Giles said. "But I hear much more interest in SystemView for Windows NT that IBM plans for next year."

Analysts: thumbs down

Airall and Giles said they accept the initial functionality of SystemView for OS/2 as adequate for workgroups, but some analysts said they weren't impressed.

"Maybe IBM's server group is driving the release of an incomplete product," said John McConnell, president of McConnell Consulting, Inc., an enterprise network consultancy in Boulder, Colo.

"The SystemView group isn't even meeting its promise to inte-

SystemView, *page 60*

SystemView for OS/2 shortcomings

- Tool vendor support is scant and unlikely
- Interface differs from that of other SystemView versions
- NetView for OS/2 network manager not yet integrated
- Adstar backup/restore tools not yet integrated
- Virus scanner not yet integrated
- Peer link to other SystemView platforms not yet supported
- Enterprise-scale software distribution not yet supported
- OS/2 platform appeals only to IBM shops

PCs no toy in realm of Hollywood production

By Jean S. Bozman

Smaller is better. Buoyed by faster chips and slicker software, the world of Hollywood computer graphics is quickly becoming a free-for-all between high-end PCs and low-end Unix workstations used for television and feature film special effects.

These smaller systems are beginning to take on turf owned by high-end graphics systems that can cost $500,000 to $1 million, users said.

Hooray for Hollywood

The 1994 digital platform market for film and video production was $200 million to $300 million in size and dominated by SGI and Apple Computer, Inc., according to Harry Nada, a multimedia tools analyst at Minneapolis investment firm Piper Jaffray, Inc. Filmmaking software accounted for another $50 million to $100 million, and 3-D animation accounted for $100 million to $200 million more.

The top example is last month's release of Walt Disney Pictures' *Toy Story*, which came to life on computer-graphics software. All the characters, lighting and animation were designed on Silicon Graphics, Inc. (SGI) Unix workstations. The resulting images were digitally processed on a "rendering farm" of 120 Sun Microsystems, Inc. Unix boxes.

For *Toy Story*, the SGI and Sun machines ran animation software from Pixar, Inc. in Point Richmond, Calif. A program called Marionette linked the SGI and Sun desktops, while a Sybase, Inc. database server tracked the movie's 1,500 shots as they were being processed.

"We've always preferred a larger number of smaller machines to [having] a single model," said Ralph Guggenheim, co-producer of *Toy Story* and vice president of feature productions at Pixar. "If part of the rendering farm goes down, it's not going to stop your production."

But the biggest savings in this on-line approach to filmmaking is in staffing the production. The *Toy Story* film crew consisted of about 110 people, far fewer than the 600 people it typically takes to do a hand-drawn animation film, Guggenheim said. A group of five people watched over the rendering farm. Pixar wouldn't comment on the film's budget, but the animation time was roughly the same as it would have been for hand-drawn animation — a little more than two years.

Payoff for Pentium Pro

If *Toy Story*'s process becomes widely adopted, more Unix workstations and high-end PCs based on Intel Corp.'s new Pentium Pro chip may be pressed into service in Hollywood.

The Pentium Pro chip is as fast as most high-end RISC processors in Unix systems, and it will run graphics applications on Microsoft Corp.'s 32-bit Windows NT, analysts said. Such systems, along with PowerPC-based NT systems, are set to ship next year.

Disney's movie Toy Story *was created on SGI desktops and rendered on Sun workstations linked by Pixar's Marionette software*

Brett Leonard, who directed this summer's feature film *Virtuosity*, said high-end PCs can take on many more filmmaking tasks. PC-based systems will allow Hollywood's small shops to compete with bigger studios and will let producers reuse digital material for related CD-ROMs and interactive games, he said.

"We've been trying to reinvent media production from the ground up as a process," said Leonard, co-founder of L-squared Communications, Inc. in Santa Monica, Calif. "And part of that is using lower-end tools because they're going to be a bigger part of consumer interactive media." He uses Autodesk, Inc.'s 3D Studio for special effects.

But all the new choices bring trade-offs. Some argue that PCs — even those outfitted with graphics cards and extra memory — can't handle very large data sets and aren't as scalable as Unix systems. SGI's high-end Onyx machines can do in hours what it takes PCs many days to do, said Hoyt Yeatman, co-founder of Dream Quest Images, Inc. in Simi Valley, Calif.

"It's called throughput," Yeatman said. "If you have a bottleneck as the release date comes up — whether it's computation time, number crunching, disk storage or the speed of moving images around — that can get to you." Dream Quest uses Macintoshes for TV commercial production and SGI servers to crunch multigigabyte data sets.

Guggenheim at Pixar said he didn't consider using PCs this time around. "It's all a matter of price/performance and reliability and the need to work with very complex graphics," he said. "There were about 5M bytes in each frame, and it took 1T byte of data to make the movie."

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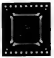

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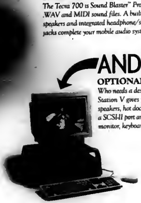

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AT&T devises way to cluster NT Server, boost performance

GIS offers fail-over capability without specialized hardware

By Stuart J. Johnston

Servers

Simple clustering capabilities for Windows NT directly from Microsoft Corp. are still a year or more away, but AT&T's Global Information Solutions division has begun shipping NT clustering of its own.

And while that may not be enough for many users, especially in the wake of AT&T's impending spin-off of AT&T GIS, some early adopter companies will likely find the product attractive, according to one analyst.

Clustering "is something that NT sorely needs" because the lack of "high-availability platforms is one of the biggest deficiencies in NT," said Michael A. Goulde, a senior consultant at Patricia Seybold Group in Boston.

Additionally, the new AT&T clustering product, called LifeKeeper for Windows NT, is a port of AT&T's Unix clustering product, which already has an established following among AT&T Unix users, Goulde said.

The product provides fail-over clustering between two servers, where one machine will take over the other's tasks in the event of a system failure. LifeKeeper does not require specialized hardware, said Martin Sinnott, marketing director for software at the GIS worldwide systems marketing group in Dayton, Ohio.

LifeKeeper also works with Intel Corp.-based servers, including those from companies other than AT&T GIS.

The package is part of a larger strategy to release several of AT&T's enterprise offerings on NT. Other recently shipped products include NT versions of Top End, the company's middleware product for distributed applications management; and CommVault, a network backup and restore utility (see chart).

Meanwhile, Microsoft is busily working on an NT clustering product of its own. Jim Allchin, Microsoft senior vice president of Business Systems, in October said the company plans to release its own fail-over clustering solution [CW, Oct. 16]. While Allchin didn't say when that will be, sources said it will likely be within a year.

Longer term, Microsoft will also release a much more comprehensive clustering solution called "shared-nothing" clustering, but that is likely years in the future. Microsoft's fail-over clustering will be based on technology it is acquiring from Digital Equipment Corp., Allchin said.

Customers anxious

But some customers cannot wait. Software Spectrum, one of Microsoft's largest U.S. resellers, has seen a burgeoning demand for NT among its corporate customers, said Link Simpson, president of the reseller's technology services group in Garland, Texas.

Because many of those customers are beginning to deploy NT in mission-critical situations, there is an increasing demand for fail-over clustering, which may tempt some to buy LifeKeeper, he said. "The early adopter community will tend to adopt third-party solutions sooner because they don't want to wait," Simpson said.

Prices for LifeKeeper for Windows NT start at $4,600.

AT&T GIS's Windows NT offering

Product	Function
LifeKeeper for NT	Provides fail-over clustering
Top End for NT	Middleware for monitoring distributed transaction processing
CommVault support for NT	Provides automated networkwide backup
Advanced Server for Unix	Improves interoperability for Windows NT and Unix servers

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Exchange late for in-house date

By Mitch Wagner

Microsoft Corp. is about 30% behind schedule in rolling out its Exchange messaging product to its own employees, *Computerworld* has learned.

The company has been switching internal users to Exchange for about a year and now has 5,100 users up and running on the software, compared with an initial expectation of about 7,500, said Greg Lobdell, director of product management for Exchange and Microsoft Mail.

The delay is due to difficulties in connecting to the Internet — specifically, problems with a Simple Mail Transport Protocol (SMTP) gateway running on Xenix PC-based Unix servers at Microsoft's headquarters in Redmond, Wash. The gateway, designed by Microsoft for internal use, is breaking down under a load of 200,000 messages per day.

"The net traffic is a result of people starting to use Exchange for what it was intended to be used for," Lobdell said.

Lobdell hastened to point out that the Xenix SMTP gateway is not a commercial product and that outside customers, therefore, won't see the same problems that Microsoft is having when Exchange ships by March.

"This is the usual issue with software under development," said Joni Larned, manager of the messaging services group in the Information Technology Group, Microsoft's internal information systems arm. "Exchange is getting a real stress test with us."

Larned said she expects Exchange will be fully installed at Microsoft by June, which is on schedule. The company expects to pick up speed and complete the installation after working out the original bugs.

The fact that Microsoft had a problem with its own products didn't appear to faze potential customers. "We are cautiously optimistic that they will resolve their technical issues and have an effective product," said Tom Webb, manager of electronic messaging at Shell Services Co. in Houston, the IS subsidiary of Shell Oil Co.

Marion Weile, senior electronic mail technologist at Chevron Information Technology Co. in San Ramon, Calif., agreed. "We've dealt with scaling up other mail systems, and for Microsoft to be able to add that many users that quickly is a pretty good accomplishment and a demonstration of confidence," he said.

About Microsoft's Exchange

▶ **What is it?**
Messaging and workflow software designed to run across an entire enterprise, integrating E-mail, scheduling, electronic forms, document sharing and applications such as customer tracking.

▶ **When is it due out?**
First-quarter 1996.

Briefs

Wang, ZyLab polish image

Wang Laboratories, Inc. and ZyLab International, Inc. have integrated Wang's Open/Image imaging software with ZyLab's image management and text retrieval software. The products will work together automatically if installed on the same machine.

Desktop players team up

Spectragraphics Corp. plans to develop a special version of its TeamConference collaboration software that plugs in to desktop videoconferencing software from InSoft, Inc. The software bundle will be aimed at manufacturing operations.

Vantive lands in Web

Vantive Corp. in Mountain View, Calif., a maker of client/server customer interaction software, has released VanWeb, software that lets World Wide Web users browse, access, report and retrieve information from a Vantive system. Developers can define Web forms, security and workflow rules that can hook to a Vantive system. VanWeb costs $25,000 per server and will be available in December.

Sun SPARCs low end

Sun Microsystems Computer Corp. in Mountain View, Calif., has cut prices on its low-end SPARCstation 4 Unix workstation and added an entry-level model at $4,295 to compete against PC-based workstations. The new model has a 110-MHz MicroSPARC II RISC processor, 32M bytes of memory, 1G byte of storage and a 15-in. color monitor. The older model was priced $400 higher but had a 85-MHz processor and 16M bytes of main memory. Sun also cut the price of its SPARCstation 5 to $8,995, or about 20%. Both low-end workstation models are shipping, Sun said.

Optical storage standard

The Optical Storage Technology Association has updated its Universal Disk Format standard to include the ability to interchange data with consumer digital video disks (DVD). PC users, with the help of authoring software, will be able to create interactive multimedia applications with video data from a DVD player.

More secure

WRQ, a Seattle Unix-to-PC connectivity firm, recently announced Reflection Secure, a Windows PC package that ensures secure access to Unix servers via Telnet. The $99 package works with Kerberos security software. It will ship by year's end.

HP gets digital video

Hewlett-Packard Co. will soon offer networked digital video across its hardware line, from PCs up to Unix system servers, thanks to an agreement with Starlight Networks, a maker of multimedia networking middleware. The first product, HP's NetServer with Starlight's Starware 2.0, is targeted at low-end workgroups and will cost $28,000 to support 50 users and store up to 20 hours of video, for example.

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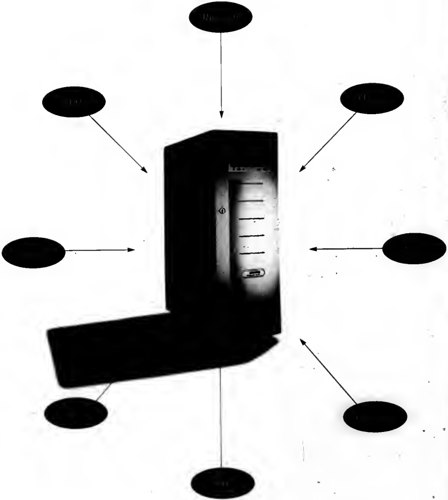

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COMPAQ

Has It Changed Your Life Yet?

NetWare management made easier

Network administration

By Patrick Dryden

Two recently shipped tools help administer extended networks based on Novell, Inc.'a NetWare.

NetPro Computing, Inc. has completed DS Expert for NetWare 4.1, the first diagnostic utility for NetWare Directory Services (NDS). DS Expert monitors NDS on servers throughout an enterprise network to help managers optimize performance, and it helps find and fix inconsistencies in replicated tables.

Citadel Computer Systems, Inc. upgraded NetOff, software that automatically logs off idle stations to enhance security, free server connections for other users and prevent open files from disrupting scheduled backup routines. The new, friendlier version saves the user's work and exits each application — unless data transfer is under way — by playing a sequence of keystrokes.

Both packages seek to simplify the management of distributed client/server networks for harried administrators.

"NDS is a great global service that lets anyone access from anywhere, but it will go wacko on you if you don't keep all the replicas synchronized," said Andy Von Der Bruegge, server administrator at the Missouri Department of Health.

He beta-tested DS Expert and plans to implement it for monitoring 17 NetWare 4.1 servers at the department's headquarters in Jefferson City and six servers in regional offices.

"Now we'll know at a glance what's going on in NDS," Von Der Bruegge said.

Besides making administrative life easier, DS Expert should also reduce the cost of ongoing NetWare support by slashing incident payments for phone fixes by Novell — as soon as NetPro fills the gaps in its context-sensitive help.

NetPro's ambitious goal is to explain every NDS parameter and error condition and then suggest solutions. But statistics and error messages aren't all complete, Von Der Bruegge said. "This is the only product I've seen that manages NDS like this, telling you what's wrong and how to fix it."

Officials at NetPro in Scottsdale, Ariz., said even Novell engineers can't explain all the intricacies of NDS yet, so updates will follow. Future versions will support the broadcast of alerts via electronic mail or pager and will integrate with Novell's ManageWise console.

DS Expert starts at $1,299 for software that monitors the NDS tree, two agents for servers and the Windows console. Additional agents cost $499.

A helping hand

The administration of extended networks can be a chore. The following two products can help:

Company:	NetPro Computing Scottsdale, Ariz.	Citadel Computer Houston
Product:	DS Expert for NetWare 4.1	NetOff System V Version 4.54
Description:	Monitors, troubleshoots and optimizes NDS	Automatically logs idle or forgetful users off network. Enhanced to save work and exit applications first.
Price:	$1,299 for the NDS tree monitor and Windows console with two server agents; $499 for each additional agent	$499 per server for up to 100 stations

Ghost in the machine

For its part, Version 4.54 of NetOff System IV adds a database of shutdown keystroke sequences that can execute automatically when users forget to log off the NetWare 3.x or 4.x network. This "virtual user" feature can preserve any work that was under way, unlike prior NetOff versions that dumped users to meet the needs of an administrator or security policy.

"Often users don't do what you tell them, so NetOff is a safe way to deal with those who don't log out before they leave," said Menbere Haile, help desk manager at the U.S. Inspector General Agency. He credited NetOff for securing important files accidentally left up on users' screens and assuring that LAN backup routines don't skip over any files left open overnight.

The 4K-byte NetOff module running in each PC offers three control stages. It blanks the screen and locks the PC after a hot key is pressed or a period of inactivity passes. It logs a user off the network after an extended period of keyboard and mouse idleness. And it logs all users off the network at a preset time for backups or maintenance.

NetOff costs $499 for one server and up to 100 stations. Houston-based Citadel offers a library of shutdown routines for popular software, and administrators can customize keystrokes to exit homegrown applications.

However, this new NetOff feature works only with Windows applications and DOS programa running from Windows, according to Haile. "If you boot with DOS only, NetOff doesn't know how to close a program for you. It must look through the Windows task list to see what's open and how to terminate."

NLMAuto lets managers get a grip on workstations

By Laura DiDio

Knozall Systems has released software for NetWare-based LANs that lets administrators automate routine server tasks on corporate and remote office networks and reduce management time by up to three hours a day.

The NLMAuto Professional Version 3 is a software-based NetWare Loadable Module (NLM) that runs as an application on top of Novell, Inc. NetWare 3.x and 4.x LANs, said Torie Brown, Knozall's product manager. Knozall, a division of Tangram Enterprise Solutions, Inc. in Chandler, Ariz., will ship the product this month.

The NLMAuto Professional allows network administrators to schedule and control remote server and workstation tasks such as running unattended tape backups and performing large batch file transfers and print jobs.

NLMAuto Professional Version 3

Features:	• Schedules unattended server tasks such as backup and file transfers • Cuts file transfer time by up to 80% • Manages remote servers without user's having to pay for a full-time connection
Requires:	• Novell NetWare 3.x or 4.x file server • 180K bytes of server memory and 1.5M bytes of server disk space • 8K bytes of RAM on each DOS 3.x or Windows 3.1 or higher IBM-compatible PC
Price:	• $695

The Knozall NLM also gives businesses the ability to synchronize, copy and delete directories on NetWare file servers, according to John Lucas, Knozall's development manager of LAN products.

Longtime Knozall user Desmond Fuller, senior member and manager of Pencom Systems Administration, a division of Pencom Systems, Inc. in Reston, Va., said he was initially skeptical that the software would live up to its advance billing. But upon beta-testing the NLMAuto Professional, Fuller said he found it reliable and easy to use — and that it relieved him of the burden of several time-consuming management tasks.

"I used the NLMAuto Professional to shut down my databases, run a backup copy and then configured it to automatically reload and restart the databases. My end users never knew the server was down, and they never lost any work time," Fuller said. "The NLMAuto Professional has allowed me to off-load about two to three hours' worth of repetitive everyday tasks, so I'm now free to respond to users' requests for help and training."

Other new features in NLMAuto Professional Version 3 include the following:

- Automated job scheduling on remote or branch office servers.
- The ability to perform direct server-to-server file transfers. This saves time over the more traditional method of transferring files between workstations and servers, Lucas said.
- The ability to transfer files from workstations in the background as a terminate-and-stay resident program. This lets users continue to work without interruption.
- Job scheduling based on user-customizable parameters. Network administrators can, for example, program the NLMAuto Professional to automatically perform such tasks as purging files when server disk space has reached a certain capacity, such as 7S%.
- The Make Directory facility lets network managers synchronize directories. This is especially important for users with slower leased lines because the software ensures that only necessary data will be transmitted across the lines, avoiding excessive transfers or network overloada.
- The Modify file lets managers modify text files during upgrades from their management consoles.

The NLMAuto Professional Version 3 lists for $695.

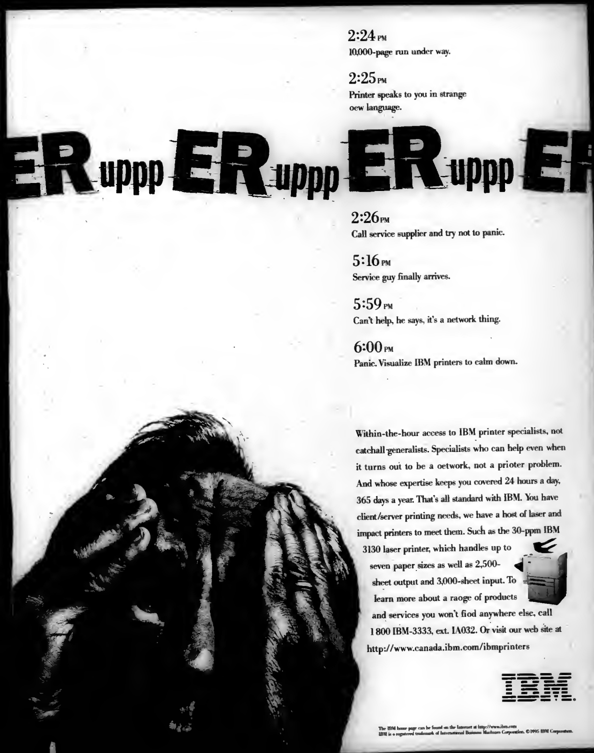
SystemView

CONTINUED FROM PAGE 53

grate IBM tools on the console as the first step. This version lacks the same interface and depth of functions," McConnell said. For a SystemView solution, he recommended adding proxy agents to workgroups and servers and managing them from the AIX version, which has far more tools available than the OS/2 version does.

IBM plans to overcome many SystemView for OS/2 shortcomings with another release, which analysts said they expect in the second quarter of next year.

With all the SystemView platforms and differences, IBM's management message is getting very confusing, said Sylvia Clark, a management analyst at Aberdeen Group, Inc. in Boston. "IBM has overcome many political hurdles internally to streamline management products on SystemView platforms, but they still have a ways to go," she said.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TRAVAN

Check imaging is like money in the bank

By Tim Ouellette

Customers are checking out Bank of the West's imaged monthly checking account statements.

About half of all regular checking account holders at the San Francisco-based bank — 85,000 out of 170,000 accounts — now receive a sheet containing images of the checks they wrote that month instead of a pile of unsorted checks that they have to store in bulky envelopes.

Bank of the West *says 95% of new account customers want images of their checks returned with their bank statements instead of the actual checks*

New account holders are leaping at the offer; 95% of these customers have opted for imaged check statements, said Bob Raye, senior vice president of marketing.

The statements come on three-hole-punched sheets with 10 check images on the front and back and are created with CheckVision software from IA Corp in Emeryville, Calif. The back-end check-processing functions are handled by a Unisys Corp check-processing system, said Don Ward, vice president of operations.

Customers receive binders in which to store the checks. Customers with vision problems are given the option to have fewer checks on a page.

Bank customers Anthony Harris and Mary Tamby said the imaged statements make it easier to maintain their records and faster to look up information.

Analysts said the practice of issuing images of checks instead of the checks themselves is becoming more common among banks. Customers benefit from having all their checks printed on fewer sheets of paper, while the bank saves money on postage and tracking of the checks.

Ward said Bank of the West has gained the following benefits from using IA's CheckVision software.

- Check reading machines now can process many more checks. Before, a single check was read several times for different purposes; now, with the new software, a single read puts the check's image into an electronic file that can be accessed constantly.
- The check-processing operation isn't held up by checks jamming the reader machines.
- The statement creation process is faster because the system doesn't have to sort and count the checks going into each statement.
- Postage costs have dropped because the weight of monthly statements without checks has decreased.

Ward said next year sometime the bank plans to issue statements to its business customers on CD-ROMs that contain searchable image files of all checks written that month.

"Today they get back trays full of checks. And if there is a problem, they have to physically search for the check," Ward said.

Bank of the West also plans to offer on-line account access so that businesses can call up their accounts and review what checks have been processed that day. With this function, they can find out immediately whether some checks have bounced rather than wait two days.

Ward said adding imaging as part of the bank's customer service strategy also has been well received by workers at Bank of the West's 100 branches around Northern California judging from early feedback, or lack thereof.

"If we don't hear complaints from the branches, it means everything is working smoothly," Ward said.

[redacted]

ConferTech International, Inc. has announced Prelude, a multipoint document conferencing product.

According to the Westminster, Colo., company, Prelude lets users conduct multipoint sessions over any combination of analog modem, TCP/IP or Novell, Inc. IPX networks. Users can share computer documents (including spreadsheets, graphs or diagrams) while participating in a standard voice conference call.

Prelude features a suite of connection and conference management functions including conference scheduling, connection management, conference monitoring, call detail reporting, remote management and network security. It can be used to manage conferences on a corporation's data network or as a gateway for access to other conferencing networks.

Pricing for Prelude starts at $20,000 for a minimum eight-port configuration. A single-bridge configuration supports up to 32 ports.

▶ *ConferTech International*
(303) 633-3000

Saros Corp. has introduced Document Server for Microsoft Corp.'s BackOffice.

According to the Bellevue, Wash., company, the product uses BackOffice to create an enterprisewide electronic information library. This library lets users scattered throughout an office or enterprise work together and share text, scanned images, spreadsheets, graphics, electronic forms, video and computer-aided design drawings.

Document Server for BackOffice features include Smart Search, check-in/check-out, version control and object-level security. These let users conduct networkwide searches by attributes or content for document types. Document-management services are applied to all documents even as users share them through Microsoft's Mail or Exchange.

Document Server for BackOffice is a 32-bit server application that uses the multithreading facilities of Microsoft's Windows NT Server to serve a large number of client workstations. It uses Microsoft's SQL Server as a relational database engine.

Pricing starts at $450 per workstation and $895 per server.

▶ *Saros*
(206) 646-1066

Retarus Network Services has introduced MS:Link, a product for linking electronic-mail products from Lotus Development Corp. and Microsoft Corp.

According to the Munich, Germany, company, MS:Link provides a link between Lotus' CC:Mail and Microsoft's MS-Mail E-mail products. It recognizes different formats and automatically converts them according to the system involved. Licenses are priced based on the number of users communicating over the gateway. Pricing starts at $1,295 for a five-user license.

▶ *Retarus Network Services*
(498) 102-7400

Connectix Corp. has announced VideoPhone, a low-cost videoconferencing product.

According to the San Mateo, Calif., company, VideoPhone sports a collaborative whiteboard and lets users share video and sound. It includes Connectix's QuickCam digital camera and doesn't require a video capture card; video is captured through the parallel or serial port, depending on the platform. It includes software that lets users send video mail and create stand-alone movies and still pictures.

VideoPhone works over standard high-speed networks: TCP/IP or AppleTalk for the Macintosh and Novell, Inc. NetWare for PCs. Pricing starts at $150 per person.

▶ *Connectix*
(415) 571-5100

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Its flexible, grow-how-you-want-it pose.

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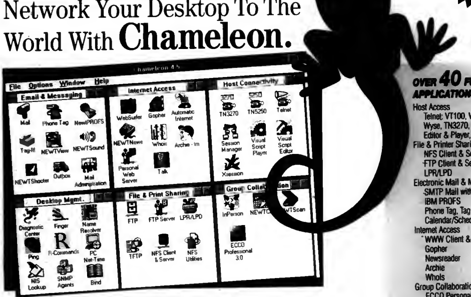
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Ping
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NIS Lookup
SNMP Agents
Bind
File & Print Sharing
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TFTP
NFS Client & Server
NFS Utilities
Group Collaboration
InPerson
NEWTC
WTScan
ECCO Professional 3.0

NEW YORK LIBRARY GOES ON-LINE, 70

Enterprise Networking

INTERNETWORKING • SERVICES • NET MANAGEMENT

Critics blast medical records privacy bill

By Mitch Betts
WASHINGTON.

Electronic medical records

For more than two decades, privacy advocates have pushed for a federal privacy law to protect medical records. Now there is bipartisan support for such a bill, but privacy advocates are blasting it for not going far enough.

"The devil is in the details," said Evan Hendricks, editor of "Privacy Times," a newsletter in Washington. At a congressional bearing last month and in other statements, critics said the bill has too many loopholes, preempts state laws and doesn't give patients enough control over the release of computerized medical records.

The bill in question is the proposed Medical Records Confidentiality Act, sponsored by Sen Robert F. Bennett (R-Utah). Cosponsors include such unusual allies as Sens. Robert Dole (R-Kan.) and Edward Kennedy (D-Mass.).

Data trafficking

Sponsors said the bill generally requires all holders of medical records to get patient consent before disclosing any personally identifiable data. Consent isn't required for disclosures related to life-threatening emergencies, legal investigations and bona fide public-health research.

But opponents said those and other exceptions allow too much trafficking in medical records.

"It needs to be s patient-centered privacy bill. Right now, the bill facilitates the flow of information, and the patient be damned," Hendricks said.

Other opponents of the Bennett bill include the Electronic Privacy Information Center, the Coalition for Patient Rights of New England, Ralph Nader's Consumer Project on Technology and the Massachusetts chapter of the American Civil Liberties Union.

The privacy issue has surfaced again because many health care providers and insurance companies are forming regional data networks to share electronic medical records. The goal is to reduce paperwork, facilitate electronic bill payments, identify the most cost-effective medical treatments and combat fraud.

The data networks need uniform privacy rules so that interstate data transactions are not hampered by a hodgepodge of state laws, which is why the bill pre-empts state laws.

At the hearing, a spokeswoman for the Association for Electronic Health Care Transactions in Washington, which represents data processing and insurance companies, said the group is worried that clearinghouses could be wiped out by poorly drafted legislation.

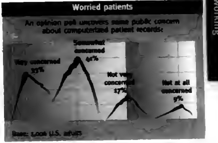
Offering support

Among the supporters of the Bennett bill are the Center for Democracy and Technology, which is trying to develop a compromise between business and privacy interests, and the American Health Information Management Association, which represents medical records managers.

Business backers of the bill include IBM, the Blue Cross and Blue Shield Association, the American Hospital Association and the Workgroup for Electronic Data Interchange.

Supporters argued that the measure, although it needs some amendment, is far better than the current void in federal law, which protects video-rental lists but not sensitive medical data.

"The bill has three or four weaknesses that, if cured, would make it a net plus for consumers. Right now, it's s net minus, but it doesn't miss by much," said Robert Ellis Smith, publisher of "Privacy Journal," s newsletter in Providence. R.I.


Worried patients

An opinion poll uncovers some public concern about computerized patient records:

Source: 1995 Equifax Harris privacy poll, Equifax, Inc., Atlanta

Newbridge unveils Token Ring-to-ATM switch

By Bob Wallace

Newbridge Networks, Inc. last week announced a switching system for Token Ring users that also allows them to communicate with users on Asynchronous Transfer Mode (ATM) networks.

Newbridge's Vivid Blue Ridge Switch is important because the huge installed base of shared-capacity Token Ring users is beginning to look for more bandwidth. And what they see is both Token Ring switching and ATM on the horizon.

Blue Ridge is among the first to offer users the best of both worlds — Token Ring switching oow and the ability to migrate to ATM as needed.

Analysts said user demand for Token Ring-to-ATM switching systems could soar.

"Token Ring switching products like Blue Ridge let users extend the life of their Token Ring environments by acting as gateway devices to ATM," said Skip MacAskill, an analyst at Gartner Group, Inc., a Stamford, Conn., researcher.

The system comes standard with LAN emulation software that enables users connected to Blue Ridge's switched Token Ring ports to share existing spplications with users connected to either or both of the two 155M bit/sec. ATM LANs on the other side of the Blue Ridge switch.

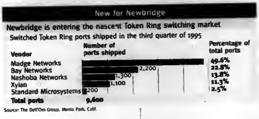
One organization is pleased with s similar switching system from Bay Networks, Inc.'s Centillion business unit.

"We needed the Token Ring switch to break up one Token Ring [LAN], which had over 300 nodes," said Harry Gentner, information systems manager at the Baptist Foundation in Phoenix.

Pricing must come down, however, MacAskill said. Dividing the $18,500 cost of Blue Ridge by 12 ports gives users a cost per port of about $1,500, which must drop to less than $1,000 per port by mid-1996, MacAskill said. The average cost per port is $1,200 to $1,500, he said, though IBM is down at the $700-per-port level.

In addition to expanding capacity, the new box also lets network managers simplify LAN administration by building virtual LANs, which are logical rather than physical networks. The virtual LANs are made up of PCs and servers attached to any of Blue Ridge's 10 switched Token Rings and two ATM ports.

The new switch alsn supports source route bridging, the standard bridging protocol that helps efficiently transmit packets from source to destination in Token Ring networking environments.


New for Newbridge

Newbridge is entering the nascent Token Ring switching market

Switched Token Ring ports shipped in the third quarter of 1995

Source: The Dell'Oro Group, Menlo Park, Calif.

LISA GARCIA

Users of the New York Public Library's LEO system *can obtain abstracts from more than 1,000 business publications and 27 newspapers*

New York library is on-line

Patrons can look up millions of titles — or surf the 'net

By Thomas Hoffman
NEW YORK

Like the famed marble lions that stand guard at the New York Public Library's main branch in Manhattan, LEO is up and ready to roar.

Library Entrance Online (LEO) is the $9.5 million on-line public library information system that promises to revolutionize how patrons gather information from the library's 50 million items.

LEO is a fully integrated system that links users in each of the library's 82 branches to 2,600 periodical listings and an extensive assortment of databases — and beyond that to the World Wide Web on the Internet.

Branching out

The New York Public Library has branches in only three of its five boroughs — Manhattan, The Bronx and Staten Island. Brooklyn and Queens have their own library systems.

Where it's at

Using any one of the 1,100 DOS-based Wyse Technology, Inc. ASCII terminals installed throughout the library's systemwide frame-relay network, users can search through 1 million titles of books, videos, cassettes and other materials. LEO tells users which branch has a particular title and whether it is available for checkout.

Frederic Labarrere, a 25-year-old Parisian student who is an intern at the United Nations in New York, has used LEO three times to surf the 'net using Netscape Communications Corp. browser software.

"The software is easy to navigate, and I never have to wait to use the system," said Labarrere, who visits the 42nd Street branch. "Of course, I usually come here early to beat the crowds."

That kind of functionality has helped put the New York Public Library at the forefront of library information systems, according to library scholars. Internet access is available through less than 10% of the nation's public libraries.

"So far, the system has been fabulous. The icons and graphical interfaces have made it very easy to use," said Susan Harrisoo, associate director of technical and computer services for the library's branches.

For example, a colorful graphical user interface named Kid's Cat, developed by The Carl Corp. in Denver, lets children browse a select portion of LEO's Dynix, Inc. database using an array of icons, such as a teddy bear with a Band-Aid on its head for stories about child abuse.

"It's really easy and fun to look for stories" using LEO, said Caitlin Cox, a 7-year-old who was recently hunting for jungle books at the Donnell Library Center on West 53rd Street.

Big people seem to like LEO, too. Beata Bak, a 20-year-old accounting major at Saint Francis College in Brooklyn Heights, was able to find the reference materials she needed for a philosophy paper in only five minutes at the library's main branch.

Checking out

LEO was developed by Ameritech Library Services in Provo, Utah, and runs on a Hewlett-Packard Co. HP 9000 Model 890 Unix server. Ameritech developed end-user database and other back-office support applications using its Dynix application development tools.

A Dynix inventory control application, for example, allows the library's circulation staff to check out materials and maintain on-line records of catalogs. That is important for an operation that processes 20,000 invoices per year and acquires 800,000 books annually.

Firms learn 'net security lessons

By Kim S. Nash

Security

One is a fancy Hollywood movie studio. The other is a buttoned-down finance firm. Though MCA/Universal Studios and The First National Bank of Chicago are vastly different companies, they recently reached similar conclusions about Internet security issues.

The goal for both companies was to prevent on-line ne'er-do-wells from hammering through their external World Wide Web sites to their internal systems. MCA launched its site in March (http://www.mca.com), and First Chicago unveiled its Web pages last week (http://www.fcnbd.com).

The most critical finding for both firms was that Internet security is best left to their core information systems groups.

Learning that lesson contributed to a one-month delay in the launch of First Chicago's Web site, said Kurt Heuberger, Web administrator and a product manager at the Chicago bank's emerging technologies group.

Early this year, on-line managers at First Chicago began studying hacking methods, encryption and other security issues. They soon realized that "there was a lot more complexity there than meets the eye," Heuberger said.

Not only are there nitty-gritty technology issues to solve, but banks must meet stringent federal and state regulations.

"We turned it over to our internal IS department, which has so much more experience and expertise in these areas," he explained.

MCA, meanwhile, enlisted its IS audit group from the start, said Sonia Macias, a senior IS auditor at MCA.

The film company in Universal City, Calif., recently finished a 250-hour study of Internet security that included everything from testing the security of its firewall to rewriting sections of the corporate handbook.

For their IS colleagues also considering Internet security, the companies offered the following tips:

- Take advantage of freeware. Programs such as Crack can be downloaded from the Internet and run on internal systems to peg user passwords that are common or easy to guess.
- Disable services that can leave you vulnerable. For instance, "finger" is a utility that lets users see information about others who are logged on to a remote system.
- Set filters carefully. Allow internal users access to some services only through certain machines. This way, administrators can keep better track of what type of material flows through the Web site.

But good security doesn't come from technology alone, Macias noted. MCA reviewed internal procedures, for example, to ensure that written rules stipulated that the Internet and other on-line services are used by employees for corporate purposes only.

"You don't want people starting unauthorized businesses," she said.

Brief

Mastercard expands remote banking

Mastercard International recently terminated its home-banking alliance with Checkfree Corp. and instead said it will expand its MasterBanking remote banking and electronic bill payment services with Servantis Systems, Inc.

Under the agreement, Mastercard and Servantis will jointly support the service and offer Servantis' PC-based Bank At Home software.

The companies expect to convert Checkfree-based MasterBanking banks to the Servantis environment by mid-1996, according to A. Christian Fredrick, senior vice president of remote banking at Mastercard International.

AT&T, Motorola fight for two-way paging crown

By Mindy Blodgett

The new world of two-way paging already is seeing a heavyweight brawl as AT&T Wireless Services tries to knock out the reigning champ — Motorola, Inc. — with its new PACT protocol.

Personal Air Communications Technology (PACT) will compete with Motorola's Flex family of protocols, the de facto standard in narrowband messaging.

AT&T, in Kirkland, Wash., is conducting field tests and hopes to have service available nationwide and in Canada by 1997.

AT&T's lateness to the market may affect the ultimate success of the technology — SkyTel Corp. has been aggressively marketing the Motorola Tango two-way paging device and service under its name — but industry observers say the AT&T protocol packs a punch.

PACT is rooted in Cellular Digital Packet Data (CDPD), the wireless data communications standard developed by McCaw Cellular Communications, Inc., now known as AT&T Wireless. CDPD is an IP-based technology that uses the cellular infrastructure to transmit packets of data.

A PACT network will route messages via intelligent base stations that are equipped with transmitters and receivers. This makes PACT networks similar to cellular networks.

On top

AT&T officials argue that the symmetric message transfer architecture of PACT, which was designed to send as much data from the wireless device as to it, makes it superior to Motorola's ReFlex. Under PACT, inbound and outbound data travels at the same rate of speed, according to Ken Arneson, vice president of business development at AT&T Wireless' Messaging Division.

ReFlex is "asymmetrical," meaning that more data can be sent to the receiving device than from it. Therefore, it is essentially an "acknowledgement" messaging protocol rather than a true, two-way messaging standard.

Motorola officials argue that the asymmetrical nature of the Flex family is what the market wants.

"Our research shows that people just want paging that lets them receive info and then quickly acknowledge it," said Larry Conley, vice president and director of worldwide markets at Motorola's Advanced Messaging Systems Division in Boynton Beach, Fla.

The open standards-based architecture of PACT — network developers won't pay any licensing fees — is aimed at small devices such as pagers and personal digital assistants (PDA), which conserve power.

Conley said Motorola, which requires licensing contracts and fees for developers working to the Flex standards, doesn't plan to change its standards policies.

Industry observers say the battle between the two communications behemoths likely will leave both winners.

Standard confusion

Iain Gillott, an analyst at International Data Corp. in Austin, Texas, said he is concerned that yet another wireless standard will confuse an already muddled wireless communications picture.

"But is there room for another paging standard in the market? The answer is probably yes," Gillott said.

PCSI, a wholly owned subsidiary of Cirrus Logic, Inc. in San Diego, has signed an agreement with AT&T to develop base stations for PACT.

Two-way street

Features of AT&T Wireless' PACT two-way messaging protocol:

- Based on the Internet Protocol
- Built for wireless two-way devices, including two-way pagers, PDAs, home monitoring devices and PC cards
- An open industry-standard protocol that lets developers build to the network without paying licensing fees
- Uses narrowband personal communications services spectrum

Wireless

Geotek enhances specialized mobile radio network

By Mindy Blodgett

Giving users wireless pen-based computers sounds like a competitive disaster, but one company swears it will gain an advantage from doing this.

Tozour Energy Systems, Inc., a heating/ventilating/air-conditioning sales and service company in Philadelphia, has signed up as a beta tester for Geotek Communications, Inc.'s Enhanced Specialized Mobile Radio (ESMR) network.

Unlike typical wireless networks, ESMR handles voice and data transmissions.

Better service

Lou Zaccone, Tozour's general manager, said outfitting 40 sales engineers with ESMR-capable pen-based computers on a wireless network gives his company "a great opportunity to deliver a higher level of service." He said anything that can make his company stand out in what he calls "a rather mundane industry" helps business.

According to analysts, ESMR could be popular among users in general.

"There is a huge potential market out there of users who want both voice and data, and Nextel and Geotek could meet that need more completely and quickly than the cellular carriers," said Mark Lowenstein, an analyst at The Yankee Group in Boston.

Nextel Communications, Inc. in Montvale, N.J., also is building a wide-area ESMR network in the U.S. It hopes to lure wireless users by offering voice and data capabilities.

Zaccone and other beta testers are testing the system with voice and data.

Limited availability

Geotek's network, which is based on the Frequency Hopping Multiple Access protocol, currently only offers voice service and transmission speeds of 4.8K bit/sec. And its nascent network is commercially available only in Philadelphia. The company will add a data overlay to its networks next spring, said Jonathan Crane, president of Geotek's U.S. operations.

Tozour pays $30 a month per user. Once Geotek offers voice, data and dispatch, Crane said he expects the average cost per user to rise to approximately $75 a month.

Zaccone said the pricing is cost-effective compared with that of data-only services such as those from RAM Mobile Data USA L.P.

Extending its reach

Geotek has networks in Philadelphia, Washington-Baltimore, Miami and Boston. New York is on its list for next year, followed by Dallas, Houston, Chicago and Atlanta. Eventually, it plans service in 36 cities.

[redacted]

Central Data Corp. has introduced the SCSIModem Server, a modem server for Unix-based computers.

According to the Champaign, Ill., company, the SCSIModem Server is a PCMCIA-based modem server with a SCSI interface. It integrates up to 16 PCMCIA fax/modems in a single chassis and attaches them via the SCSI bus. It shares the bus with other SCSI peripherals.

SCSIModem Server is available in two models: the SM-5008, which has eight Type II PCMCIA slots, and the SM-5016, which has 16 Type II slots.

The SM-5008 model costs $1,695, and the SM-05016 model costs $2,395.

▶ *Central Data*
(217) 359-8010

Siren Software has introduced Siren Mail 3.0 for Microsoft Corp.'s Windows 95 and Windows NT.

The Palo Alto, Calif., company said Siren Mail 3.0 lets users send and receive electronic mail and Multipurpose Internet Mail Extensions attachments over the Internet. Users can send E-mail from within any Windows-compatible application that supports Microsoft's Messaging Application Programming Interface.

Siren Mail 3.0 is available for Hewlett-Packard Co.'s HP 9000, Sun Microsystems, Inc.'s SunSPARC, IBM's RS/6000, Data General Corp.'s Aviion, Motorola, Inc.'s 88000 and PowerPC environments.

Siren Mail 3.0 costs $100 per user.

▶ *Siren Software*
(415) 322-0600

InSoft, Inc. has introduced GlobalConference, an H.323 LAN conferencing gateway.

According to the Mechanicsburg, Pa., company, GlobalConference allows bidirectional calling from LANs to WANs or vice versa. It connects to Ethernet or cell-based LANs and WANs using Integrated Services Digital Network (ISDN).

The product bridges InSoft's Communique and OpenDVE-based desktop videoconferencing products to H.320 ISDN, circuit-switched systems. The GlobalConference gateway implements protocols for H.323 gateways, including initial implementations of multiplexing, controlling and video and audio codes.

Pricing for GlobalConference starts at $7,950.

▶ *InSoft*
(717) 730-9501

Ositech Communications, Inc. has introduced Ace of Diamonds, a triple-function PCMCIA card designed for mobile users who need portable data access.

According to the Guelph, Ontario, firm, Ace of Diamonds combines an Ethernet network adapter, a 28.8K bit/sec. data/fax cellular modem and a CD-ROM into a single Type II PCMCIA card.

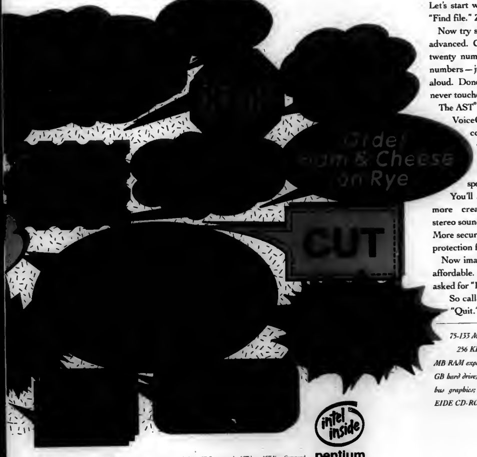
Pricing for Ace of Diamonds starts at $949.

▶ *Ositech Communications*
(519) 836-8063

Product short

Aries Electronics, Inc. has introduced TeleTalk, a tool for providing two-way telecommunications between users and computerized equipment at local or remote sites. TeleTalk can contact users to provide equipment status updates and operating conditions. Users can also dial in to request information. Cost: $285. Aries Electronics, Frenchtown, N.J. (908) 996-6841.

FINALLY, SOMEONE AROUND THE OFFICE YOU CAN TELL WHAT TO DO. IMAGINE THE POSSIBILITIES.



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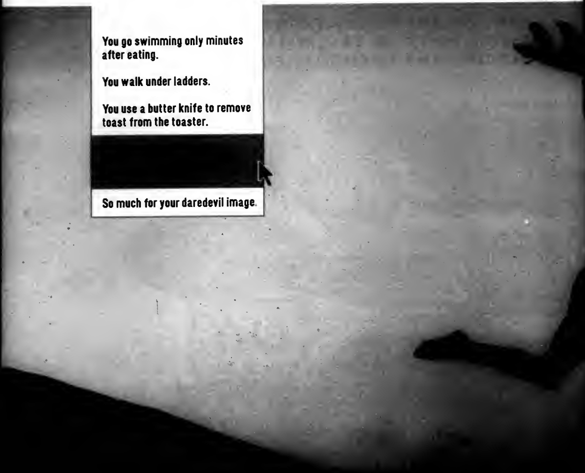


You go swimming only minutes after eating.

You walk under ladders.

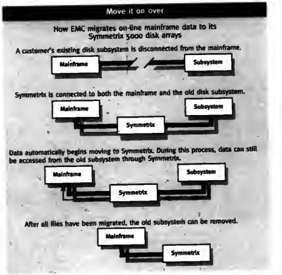
You use a butter knife to remove toast from the toaster.

So much for your daredevil image.

LAB PUTS CUSTOM APPS THROUGH THE PACES, 78
BUSINESS COLLABORATION KEY TO SUCCESS, 78

Move it on over

How EMC migrates on-line mainframe data to its Symmetrix 5000 disk arrays


A customer's existing disk subsystem is disconnected from the mainframe.

Symmetrix is connected to both the mainframe and the old disk subsystem.

Data automatically begins moving to Symmetrix. During this process, data can still be accessed from the old subsystem through Symmetrix.

After all files have been migrated, the old subsystem can be removed.

EMC automates data migration to arrays

By Craig Stedman

Trying to reduce migration headaches for buyers of its Symmetrix 5000 disk arrays, EMC Corp. last month introduced a package of software and services for moving data from old disk subsystems to Symmetrix without taking the files off-line.

EMC and competitors such as IBM and Storage Technology Corp. already offer a variety of migration services for getting data out of an old box. But EMC's new program is the first to automate the migration and let processing continue unimpeded while the data is moved, analysts said.

Several Symmetrix customers said the automatic migration capability may eliminate the need to dump data onto tapes and then load the information manually into a new array. That can be a drawn-out and draining process because data transfers usually have to be done during brief windows of time at night or on weekends when applications can be shut down.

"I really wish they'd had this a couple years ago when I could have used it," said Woody Woodard, director of computer operations and technical services at The Home Depot, Inc. Working manually, it took the Atlanta-based home improvements retailer more than two months — and a lot of staff pain — to move 500G bytes of data from IBM 3390-class devices to Symmetrix boxes, he said.

Richard Blaschke, vice president of enterprise systems marketing at EMC in Hopkinton, Mass., said the service can migrate data at a rate of about 1G byte/min. That should enable multiple terabytes of data to be moved in a month or less, he added.

EMC's Symmetrix Data Migration Services approach puts a Symmetrix array between the host mainframe and old-style subsystems such as the 3390. The array then begins pulling the data off the old device while acting as a middleman to provide continued access to files waiting to be migrated (see chart above).

At the start, the middleman process can add about 10% to the time it takes to access data, said Carl Greiner, an analyst at Meta Group, Inc. in Stamford, Conn. But performance improves as more files are moved to the Symmetrix array, and the temporary overhead beats the alternative of having to do the migration manually, he added.

Nick Varvarigos, a managing consultant at Bell Sygma, Inc. in Toronto, said even finding free time on off-hours shifts "is getting harder and harder because a lot of [users] are asking for extensions to run their applications on weekends."

Custom views key to SAS's Orlando

By Julia King

Data management

A shortage of data is rarely a problem at most companies. Instead, the challenge users face is getting all of the data there is and then organizing it in a meaningful way.

This is the puzzle SAS Institute, Inc. in Cary, N.C., is aiming to solve with a new set of data query tools and an enhanced application development environment that began shipping two weeks ago.

SAS's Orlando release consists of an expanded library of business objects that information systems departments can use to create graphically oriented executive information systems that execute against almost any type of database.

Also part of Orlando is a new Windows-based interactive interface. With it, business users can point and click their way through multidimensional data, creating customized views of information.

The price of a single license for a Windows-based PC is $500.

At The Robert Plan Corp., a specialty insurance company and Orlando beta site in Uniondale, N.Y., some 25 users are analyzing claims and policy data stored remotely on different databases by three outside data processing vendors.

Users in different departments can query the same data to create various kinds of reports based on individual business needs. For instance, new sales, losses and claims can be analyzed by region, agent or ZIP code.

A first for users

None of this information was easily available to users — or affordable — before the firm implemented the SAS environment, said Jonathan Farer, director of financial systems.

"Instead, we got mainframe reports from the vendors, and every time we needed a new or different report it would cost a fortune — as much as $8,000," Farer said.

Furthermore, Farer said, "The same code that works on Unix SAS works on MVS SAS. If you know how to write SAS programs for one

SAS, *page 82*

Connectivity, scalability highlights of DB/Expo

By Dan Richman

Data warehousing, the hottest topic in the database industry, will be the focus of nearly half the educational sessions this week at DB/Expo 95 in New York.

DB/EXPO 95

But the major vendors' announcements at the show won't concern warehousing. Most of these vendors already have their warehousing strategies under way. They are now occupied with other matters.

For example, Sybase, Inc. will attempt to regain market share, mind share and confidence within the database management systems and investor communities by formally launching System 11, an upgrade to its product line.

Sybase, based in Emeryville, Calif., will debut SQL Anywhere, formerly known as Watcom SQL. The product will be Sybase's DBMS for machines that run under DOS and Microsoft Corp.'s Windows 3.1 and Windows 95. Client/server versions of SQL Anywhere that run under OS/2 and Microsoft's Windows NT also will be available.

SQL Anywhere is set to ship by the end of the month. It will cost $299 for the stand-alone version and between $599 (for four users) and $4,995 (for unlimited users) for the client/server implementation.

George Welborn, vice president

DB/Expo, *page 82*

Lab puts custom apps through the paces

AMS 'torture tests' try to find problems before clients do

By Julia King
FAIRFAX: VA

If you haven't seen a particular combination of hardware and software work together, assume it won't.

This is the motto of staffers here at American Management Systems, Inc.'s (AMS) multimillion dollar client/server lab. Their mission is to torture-test customized applications before deploying them at client sites.

The 2-year-old lab, part of AMS's Center for Advanced Technologies, also tests new products and customer systems that may already be up and running but are performing under par.

Problem-seekers

On this particular day, Wick Keating, the lab's director, and Chris McDonald, a client/server systems management expert, monitored the performance of Association Plus, a packaged application that tracks organization memberships and contributions. At the client site where the package is being used and here at the lab, the application runs in a Novell, Inc. environment against a Progress Software Corp. database.

"The customer has had performance problems with this system, so what we've done is replicate their environment so we can find out the cause," Keating explained.

In another corner of the lab, application software developed by another AMS business unit runs under Microsoft Corp.'s Windows NT operating system and SQL Server 6 database on a Digital Equipment Corp. Alpha server. Earlier, the lab had run the same software configuration but on an Intel Corp.-based hardware platform.

AMS's Wick Keating: *His mission is to torture-test customized applications before deploying them at client sites*

By testing the software on various hardware platforms, AMS can assure its client that the system works and offer advice on which platform it will perform best, McDonald said.

At AirTouch Communications, a cellular communications provider in San Francisco, information systems director Steve McGrady ranks AMS's rigorous testing of new client/server systems as "one of the critical success factors" behind AirTouch's new Unix-based customer service system.

Prior to cutting over to the new system in April, McGrady said AMS's client/server lab staff set up a mock production environment of the new system at its Denver development office. Composed of core AMS object technology and front-end applications written in Smalltalk and C++, the AirTouch system runs on Sun Microsystems, Inc. servers and workstations against a Sybase, Inc. database.

During testing, "we drove the system mercilessly, testing it with 200 simulated users against a test database" even though the system would be used by 80 users, McGrady said.

It all worked.

"There were also things we were able to find out about network configuration and where to put code before we turned on the system with live users," McGrady said.

Another advantage: "From the first day of production, the system was tuned," he said.

Unique process

Most other big systems integrators, such as Andersen Consulting, also have in-house facilities replete with various hardware platforms and operating systems on which applications are developed. "But AMS's emphasis on testing is unique," said Tim Bourgeois, an analyst at International Data Corp. in Framingham, Mass.

"AMS is known for its really deep technical skills and as being a really slick technology company," he added. Andersen Consulting takes more of a business approach to integration, focusing heavily on business process re-engineering, Bourgeois said.

Keating said virtually all of the company's clients benefit from the work carried out in the client/server lab. This is because compatibility and performance data generated there is placed in a Notes database accessible to AMS consultants working on other client/server projects.

The rationale behind the database is the same as that behind virtually all of the lab's activities: "To be successful in client/server," Keating said, "you can't just assume anything."

Win 95: No breakthrough

Staffers at AMS's client/server lab spent much of the past year test-driving Microsoft's Windows 95. AMS's conclusion: The operating system "is not a technology breakthrough, but it addresses a lot of the technical shortcomings in Windows 3.1," said Wick Keating, the lab's director.

Business collaboration key to success

By Emily Gin
HONG KONG

Corporate strategies

Information technology managers should be aware of a management trend that may affect a company's information technology strategy in the next five years, according to research presented at a recent seminar held here. That trend — interbusiness collaboration — will rely on information technology to be successful.

It will become increasingly important for companies to work closely with suppliers, customers, peers or competitors and companies outside their industry. "To successfully administer these relationships, information technology will be a key factor," said Roger Woolfe, director of consultancy IT Management Programme.

As an example of this interbusiness collaboration, Woolfe pointed to Tesco, a large retailer with 600 stores throughout the U.K. Tesco has formed close alliances with such high-profile suppliers as H. J. Heinz Co., The Coca-Cola Co. and Procter & Gamble Co.

Each Tesco supplier is connected to the retailer's internal network, which tracks sales by feeding this information directly into the supplier's network. As part of the relationship, the suppliers analyze Tesco's sales data and decide when to replenish the retailer's merchandise.

"The companies are able to form these close strategic relationships through their [information technology] systems," Woolfe explained. "In this example, the [information technology] link is spanning from a Tesco store, to Tesco's warehouse and then to the supplier's warehouse."

This trend will also involve former rivals. Competitors will form coalitions to take advantage of economies of scale.

One example of this is the Independent Grocers Association in the U.S., which includes 3,000 small and midsize grocers. They combine their orders and send one big order to suppliers such as Campbell Soup Co. The orders are collected through a computer network, which was created by a third-party software developer.

Just starting out

The business collaboration strategy is in its infancy now, but Woolfe predicted that in five years, there will be a major shift in the number of companies implementing this strategy. He acknowledged, however, that managing relationships will be the critical factor in success, and this won't be easy.

Developing the relationships necessary for this type of management approach will take a year or two and will involve building the systems to share information and building trust. These relationships will need to be continuously nurtured.

Although it will take a lot of effort, Woolfe said the endeavor will be worthwhile as companies see their efficiency grow with reductions in inventory, faster response to customers and overall improvement in service levels.

The information technology piece is also critical for the success of this new type of management strategy.

"Current network systems are built to work with just one platform or system architecture, but MIS managers will need to build systems that can communicate with many different types of systems outside of the company," Woolfe said. "They will need to use common software and common standards for not just one industry, but possibly between different industries.

"[Information technology] departments will need to focus on outside functions as well as internal networks. So far, networks are only managed inside a company. But in the future, they will be managed between companies as well," he said.

While many companies have already implemented electronic data interchange (EDI), Wolfe noted that EDI is only a starting point for the collaborative management strategy because it doesn't extend the decision-making process to suppliers and strong relationships aren't necessary for it to work.

Woolfe said about 100 firms worldwide are implementing interbusiness collaboration.

Gin is a correspondent at *Computerworld Hong Kong.*

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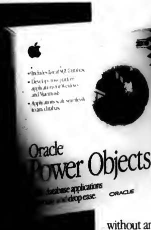

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CONTINUED FROM PAGE 77

of development at CogniTech Corp., a software developer in Atlanta, said beta copies of SQL Anywhere have been installed on six salespeople's laptops. The salespeople use it to maintain a database of customers and prospects that can be synchronized many times daily with SQL Anywhere on a server under Windows NT "Now we know whether a prospect is fuming waiting for a call or would fume if be received another one," Welborn said.

Making connections

Connectivity among disparate platforms and DBMSs also will be a focus at the show. Information Builders, Inc. in New York will announce four partnerships it says will give it the technology to create Version 4.0 of its EDA/SQL middleware.

Release 4.0, which is set to ship by the middle of next year, will include asynchronous messaging for more reliable delivery of data to mobile users and replicated sites, support for binary large objects and user-defined data types and centralized management capabilities.

The growing popularity of three-tier architectures also will be apparent at OB/Expo 95. Open Horizon, Inc in Belmont, Calif., will announce Connection Application Broker, a tool it claims will let developers convert two-tier client/server applications into three-tier applications.

The tool improves the application's performance by making more efficient use of the machine handling each tier. It also means changes made to the application have to be made only on the server, not oo every client.

Connection Application Broker moves some or all application logic from a client to a server, with no sacrifice in performance, according to Chip Overstreet, marketing director at Open Horizon. The product is set to ship by April 1. It will cost $195 per machine.

SAS

CONTINUEO FROM PAGE 77

environment, you know how to write for all of them."

Rapp Collins Worldwide, a direct marketing firm in Irving, Texas, is using SAS tools to furnish its customers with access to their databases. The company's clients include Bell Canada and Hilton Hotels Corp., whose guest reward program is managed by Rapp Collins.

Among other things, the marketing firm used SAS tools to build the custom interface that Hilton staffers use to access guest data.

A map of Orlando

Orlando, a new set of application development tools from SAS, includes:

- Objects for three-dimensional graphs and organizational charts
- The ability to combine objects by pointing and clicking
- Direct access to Microsoft's SQL Server databases in Microsoft's Windows NT environments
- Support for OLE-embedded objects

SAS's portability is an important advantage because Rapp Collins stores its hundreds of millions of records across a broad spectrum of databases on mainframes, Unix-based midrange platforms and PCs.

Support for Microsoft Corp. Windows NT and Windows 95 environments — both new with Orlando — is another benefit.

One reason is because Windows 95's multithreading capabilities will let users conduct multiple SAS-based queries simultaneously, according to Tony Brown, development manager of decision-support systems at Rapp Collins.

Another reason this support is key, Brown said, is because it allows users to save money by buying one version instead of one for each different desktop environment.

The bottom line, he said, is that Rapp Collins is now saving $4,500 to $5,000 per PC that it equips with SAS tools.

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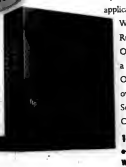

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Looking good

Visual development has steep learning curve, but payoff can be worthwhile

By Frank Hayes

Closer Look
VISUAL DEVELOPMENT TOOLS

Nearly half a decade after Windows began dominating the desktop, visual development — using a mouse instead of conventional lines of code — is a fact of life for corporate developers. But most developers working on client/server applications still are learning hard lessons about how to use these tools.

Visual tools include Microsoft Corp.'s Visual Basic, Sybase, Inc.'s PowerBuilder and high-end visual environments such as Texas Instruments, Inc.'s Composer. They all make it much quicker to assemble the graphical user interface (GUI) for a client/server application, users said. Using a mouse to drag elements together to create a screen is much easier and less error-prone than writing in a conventional programming language such as C or C++.

But developers in the GUI-building trenches also say that visual development has different rules.

"This is not the same sort of beast anymore," said Nicolas Richards, a senior systems consultant at the Platt's division of the Standard & Poor's Corp., a unit of The McGraw-Hill Cos. in New York. "That doesn't mean you can't do it. It means, know what it is you're going to be up against."

Learning those new lessons can mean the difference between success and failure for enterprise-scale projects.

The users have it

The first lesson: Start spending more time with users to find out what they need.

"Most of the time, if you can't sit users down and show them exactly how it's going to work, it's hard for them to understand," said Brett Cowell, director of development at Regency Systems Solutions, a division of Hyatt Corp. in Oakbrook Terrace, Ill. That makes gathering requirements on paper, without using visual tools, a hit-and-miss process.

But visual tools make it much easier for developers to build quick demonstration screens that show users what they will get — and the tools let users tell developers what they need early on.

Close user involvement also lets developers radically improve applications, instead of just adding a GUI.

"We're giving users new functionality that lets them create customized data products. We had to do that in the past," Richards said. The result: Users are empowered, and information systems has more time for other projects.

Like all applications, those built with visual tools should start with a prototype. But visual tools make it much easier to start with something small and build on it, said Gary Decker, manager of forward warehousing at Tri Valley Growers in San Francisco.

"You deliver something useful and then let users tell you how to make it fancier, better and more useful, rather than try to think of all the possibilities and develop some big slam-bang application," Decker said.

"With all the visual products, the database connectivity hasn't really been industrial strength."

— Greg Colbert
Executive vice president
Docutrieve, Inc.

"All the current visual development tools are focused on screen development."

— Leonard Mignerey
Director of administrative computing services
Rutgers University

"Visual development tools are of tremendous advantage in ongoing maintenance."

— Don Buskard
Vice president
Equitable Life Assurance Society

Some of the expected benefits of visual rapid development tools simply don't show up, users said. Case in point: "I can't say it leads to significant developer productivity," said Don Buskard, vice president at the Equitable Life Assurance Society in New York. "But visual development tools are of tremendous advantage in ongoing maintenance, because in many ways the tools are self-documenting."

The learning curve for visual tools also is very high, said Lily O'Byrne, vice president of applications for Lockheed Martin Enterprise Information Systems, a division of Lockheed Martin Corp. in Sunnyvale, Calif.

"People should not go in naively thinking these tools are very friendly and you can just sit down and be productive in a short time," she said.

Often, key technical capabilities are missing, too. "With all the visual products, the database connectivity hasn't really been industrial-strength," said Greg Colbert, executive vice president of Docutrieve, Inc., a subsidiary of Title Guaranty of Hawaii, Inc. in Honolulu. Simple ad hoc database queries may work fine, but visual tools have trouble with heavy-duty transaction systems, users said.

Other problem areas include the ability for applications to run continuously and deal with large quantities of data, even on an ad-hoc basis, users said.

Finally, never take the non-visual part of the application for granted. You'll need to prototype networking and business logic and GUI screens.

"All the current visual development tools are focused on screen development," said Leonard Mignerey, director of administrative computing services at Rutgers University in Piscataway, N.J. "People focus on how rapidly you can develop the front end, and that ignores a big knotty problem — when you have an enterprise-level application and you have a huge business rule component, that takes a lot of time, regardless of how you develop it."

Not so easy after all

If visual development tools are so easy to use, why not let users develop their own applications? As Alaska Airlines learned, that approach doesn't fly.

"I think the principle of getting users involved is still valid," said Mark Guerette, a senior office systems analyst at the Seattle-based unit of Alaska Air Group. The firm built a new front end to its reservation system using Microsoft's Visual Basic. "But what we actually tried to do is make programmers out of them," Guerette said.

Reckoning that users would know best how the reservations system should work, the development team identified reservation agents with an interest and aptitude in programming.

It trained them in programming concepts and sent them to a Microsoft-licensed course in Visual Basic. The user/programmers joined a team of experienced developers who tackled the tougher programming tasks and provided guidance. But two weeks of training wasn't enough to prepare users for the four-month project. "For some of them, it was [like] trying to take a drink from a firehose," Guerette said.

The more experienced developers knew programming, but the graphical interface concepts were new to them. The trouble they had, combined with the inexperience of the user/programmers, raised the team's level of stress and frustration. Still, "when all was said and done, we shipped on time and the product was successfully received," Guerette said.

If Alaska Air had to do it over again, it would provide more training time or use the end users only in the design phase, where their system knowledge was invaluable. *— Frank Hayes*

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Financial services firms reap object benefits

By Tim Grantham
TORONTO

Objects are closer than they appear.

That might well be the message for developers at large financial services corporations if the case studies presented at the recent Executive Symposium on Object Technology are anything to go by.

While most companies are still waiting for the Object Management Group and Microsoft Corp. to work out their differences, players such as the Bank of Nova Scotia and Canadian Imperial Bank of Commerce have taken the plunge and reaped big payoffs in faster development and more reliable applications.

18 million lines of Cobol

Bank of Nova Scotia has 4 million on-line transactions to process every day and 18 million lines of Cobol code. That would make Canada's fourth-largest bank an unlikely candidate to switch to the Smalltalk object programming language.

Yet that is what it chose for a branch application development project, and it has reaped huge gains in programmer productivity as a result.

The bank saw the pace of its PC application development more than double, from 90 function points per month in fiscal 1994 to 205 1 points per month as of July, said Mike Evans, senior vice president of domestic systems development. Function points are a common programming productivity measurement tool

The bank's first production Smalltalk application, which enables employees at the bank's 1,236 branches to capture new-customer data and help new customers choose the right type of account, clocked in at 221.6 function points per month. Evans said he expects that figure to be even higher for the loans application processing system, thanks to the reuse of objects developed for the first application.

But while the ride has been fast, it has also been rough. Developing with object technology has been challenging and at times painful, said J. Drew Brown, senior vice president of operations and systems development at Bank of Nova Scotia.

Training costs

"The first application cost about 25% more than we anticipated because we had to put more money into getting our people up the learning curve. We educated our technocrats to the hilt and then discovered our business partners didn't know what we were talking about," Brown said.

Brown said the iterative development process fostered by the switch to Smalltalk proved both a blessing and a curse. While it enabled end users to contribute much more directly to the design of an application, it also encouraged them to request more and more functionality at each iteration. It became quite difficult to manage the scope of each project, he said.

Brown said the bank chose Smalltalk from ParcPlace Systems, Inc (now ParcPlace-Digitalk, Inc) over C++ so it could make a clean break with the past.

"If we were going to get into the object world, we didn't want a door open through which to slide back into the procedural world," he said

Of the bank's 275 programmers, 30 now use Smalltalk.

Picking Smalltalk over C++ has other advantages, according to Steve McClure, an analyst at International Data Corp. in Framingham, Mass. "C++ is very difficult to learn. Smalltalk has a simpler syntax and the language itself is simpler," he said.

McClure said the Bank of Nova Scotia's commitment to object technology doesn't signal widespread adoption by corporate developers. However, the number of companies that say they are doing nothing about object technology has dropped from 50% last year to 30% this year, he pointed out.

Grantham is a freelance writer in Paris, Ontario. He can be reached at tmgr@ibm.net.

Bank on it

Officials at the Bank of Nova Scotia offered these recommendations for using object-oriented programming:

- **Start by establishing usability and graphical interface standards**
- Include users, quality assurance groups and developers in each stage of the process
- **Establish the build process – the stage at which all parts of the application come together – to test the infrastructure and the delivery mechanisms early on**
- Build architecture components concurrently with the application
- **Ensure your staff has enough technical depth to temper outside consultants' ideas**
- Assign staff to review all repository code for unnecessary duplication early on
- **Perform extensive regression testing**

Bank of Nova Scotia's *Mike Evans says the pace of PC app development has more than doubled*

Multiple benefits of objects

In 1994, Equitable Life of Canada turned to object technology as a way to capture its employees' business knowledge in software. The technology also helped reduce staff size.

In 10-months, Equitable completely redesigned its information systems architecture, said Anne Broughall, vice president of information technology at the Waterloo, Ontario, company.

It wrapped its core Digital Equipment Corp. OpenVMS legacy system in an object technology infrastructure based on an Oracle Corp. relational database. Server application development tools center on Borland International, Inc.'s C++ and Forte Software, Inc.'s Forte. Windows client application development tools include Microsoft's Access and Visual Basic and Digital's LinkWorks.

Equitable first used the architecture to re-engineer its mortgage business, aiming to boost volume by 40% over two years without increasing costs and reduce staff by 30%.

After one year, Broughall claimed, Equitable has already met the staff reduction goal, and mortgage sales have increased by 22%.

Meanwhile, unit costs have dropped 16%, and the mortgage approval cycle time has plummeted from 48 hours to 20 minutes.

— *Tim Grantham*

Talent hunt

Training in object technology was not an issue for Canadian Imperial Bank of Commerce Wood Gundy Securities, Inc., which simply hired the best talent it could find.

Last August, it wooed Patrick J. Kerpan from his position as executive director of Swiss Bank/O'Connor's derivative trading systems to help Wood Gundy establish a presence in the global market as quickly as possible.

By April, Kerpan had completely revamped Wood Gundy's derivatives trading and sales systems, expanding its coverage to include 200 users in seven cities around the world as well as laying the foundation for the development of new products and services.

Custom applications were developed primarily with C++ and Microsoft's Visual Basic against Sybase, Inc.'s Sybase 4.9.2 and System 10 databases.

Kerpan said object technology enabled Wood Gundy to focus on services based on relationships with customers rather than transactions.

— *Tim Grantham*

Iona's object request broker bridges gap between interfaces

Orbix combines features of Microsoft's OLE and OMG's CORBA technologies

By Sari Kalio
LAS VEGAS

Iona Technologies Ltd. recently unveiled the latest version of its Orbix object request broker, which integrates two competing object interfaces.

One is OLE, Microsoft Corp.'s proprietary object interface model. The other is the Object Management Group's (OMG) Common Object Request Broker Architecture (CORBA), a standard developed by members of the industry consortium for communications among objects.

Iona's Orbix 2.0 for 32-bit Windows will let OLE objects communicate across a network with other OLE and CORBA objects, Iona officials said.

Object development

This means developers can combine OLE's easy drag-and-drop capabilities with CORBA's distributed architecture and network orientation.

With Orbix 2.0, Visual Basic developers can also make CORBA objects using OLE custom controls, according to Colin Newman, Iona's vice president of marketing.

While the earlier versions of Orbix for Windows 3.x allowed CORBA objects to be invoked from the Windows desktop, the new version also allows Windows applications to be invoked by the CORBA server, he added.

Orbix 2.0 costs $1,000 for the developer's kit.

Kalin is an IDG News Service correspondent.

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Dr. James H. Goodnight
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2

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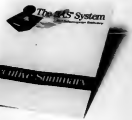

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USoft Developer the new player in U.S.

Unisys-backed product will target server side

By Neil Weinberg

The new actor on the client/server development tools stage is a well-heeled veteran with a long list of European credits who is trying to lose the foreign accent and grab a starring role in the U.S.

So far, most of the action since Unisys Corp. bought the Netherlands-based Top-Systems International in February has taken place off camera.

The independent subsidiary changed its name to USoft, moved its headquarters to California, put a new management team in place, broadened its product line and defined an overall strategy, according to Judith Hurwitz, president of Hurwitz Consulting Group, Inc. in Newton, Mass.

But USoft, leading the way with its USoft Developer tool, is shooting for the U.S. limelight next year.

Domestic team

USoft has 275 employees in the U.S., including its own sales force.

According to Art Sarno, vice president of marketing, the company is targeting the financial, health care and banking markets with open systems development tools that emphasize the server side of the client/server equation.

Specifically, USoft is targeting what Sarno calls the "aftermarket" of users who need to scale beyond the workgroup level. And it is going after non-Unisys customers.

Client/server tools

"This is very clever technology," said Mitch Kramer, an analyst at Patricia Seybold Group in Boston. But USoft has yet to light the world on fire.

"It's probably fair to say they haven't lit the match yet," Kramer added.

He said there is room in the market for new development tools, but "you've got to tell people what the tools are, what they're good for and why."

According to Kramer, USoft Developer is "a good tool for database-centric applications," but not necessarily for application logic.

York University in Toronto has been using USoft Developer to create a student accounts receivable system. Allan Cobb, director of student information systems architecture, said that after about two years of development, he is deploying the application for 50 users. He said he plans to expand that to 150.

Strong suit

Cobb said he has been impressed by the ease with which a graphical user interface can be developed with USoft Developer. He also said the product is strong in integrating business rules and database management into PC and workstation applications.

On the downside, Cobb said USoft Developer is fine for stand-alone client/server applications, but it isn't conducive to "server-to-server communications."

"My first item on the wish list is for USoft to provide a mechanism for on-line transactions with other servers. That hasn't arrived in concrete form yet," he said.

The USoft strategy of concentrating on server-based applications is "right on target," Hurwitz said. But it is too soon to tell if the firm will capture significant market share in the U.S.

Hurwitz said there are at least 20 other companies competing in the high end of the market. One advantage for USoft is the $50 million Unisys has committed to the venture.

"The fact that they're well-funded doesn't hurt," she said. "You need money to play in this market."

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Joy Matthews

JAD to the rescue

Joint application development (JAD) is an old idea whose time has come.

Companies have re-engineered their business processes, and now IS departments need to become enabling business partners. To do this, IS needs to have a definite process to handle projects in a repeatable and measurable manner. This is where JAD can help.

JAD is a technique for developing business systems requirements. It brings together the business users and the IS organization in a 3-to-1 ratio and puts them in a structured workshop setting to identify requirements based on consensus. JAD teams should be made up of people from across the corporation, similar to teams used in business process re-engineering.

JAD supports that culture by providing a way for IS to continually analyze and improve the applications that support business process re-engineering. As departments across the enterprise share information, JAD becomes an important tool for companies. The JAD sessions also provide an opportunity for peers across functional areas to resolve issues.

The acronym might seem overwhelming. But clearly, something needs to be done. Industry studies show that 56% of systems problems are based on poor requirements definition, as opposed to 7% that are caused by poor coding. In the maintenance arena, 82% of the effort is due to poor requirements as opposed to 1% for poor coding.

More JAD

Denise Silver, manager of business systems engineering at Provident Mutual Life Insurance Company of Philadelphia, said, "JAD is more important now more than ever." Traditionally, JAD had been used at Provident mostly for analysis and design. Now it is being successfully applied throughout the systems development life cycle for tasks such as strategic planning, choosing software packages and prioritizing projects, she added.

Meanwhile, Prudential Property & Casualty Insurance Co. is going through some business process re-engineering and is developing the applications to address these business process changes. To support these changes, Prudential is training 45 IS employees in JAD.

Richard D'Addario, Prudential's process manager, said JAD has become "very important" at hia firm because it provides "an effective way to get our customers/users directly involved in designing the systems that they need."

Matthews is vice president of training and consulting services at Pierson Applications Development, Inc., a methodology development, training and facilitation firm in Stamford, Conn.

Briefs

Intersolv Tracker debuts

Intersolv, Inc. in Rockville, Md., recently rolled out PVCS Tracker 3.0, a new version of its problem-tracking system for software development teams. The release uses database replication to let developers at widely scattered sites share information on bugs and changes in software under development across wide-area networks. PVCS Tracker 3.0 can be used with or without Intersolv's PVCS configuration management system and is available now at $499 per user.

CA, Mosaix team up

Computer Associates International, Inc. announced a global agreement with Mosaix Technologies Ltd. in Sydney, Australia, to enable Mosaix Technologies' spatial client application development tool, Mosaix, to work seamlessly with CA-OpenIngres.

Borland adds Win 95 features to Delphi, C++

By Cara A. Cunningham
LAS VEGAS

Borland International, Inc. threw new versions of its Delphi and C++ tools into the Comdex/Fall '95 exhibition fray, highlighting Windows 95 migration features.

Delphi Client/Server Suite 2.0, scheduled for delivery during the first quarter next year, will let developers build 32-bit applications for Microsoft Corp.'s Windows 95 or Windows NT, said M. Zack Urlocker, director of Delphi product management.

Borland will include its 16-bit version of Delphi with the new version, so developers can create 32-bit applications at their own pace, he said.

"There are lots of corporations that are not ready for 32-bit applications yet," he said.

For those that are, Urlocker said Borland will include a suite of 32-bit utilities with Delphi Client/Server. These include a program for examining SQL metadata; a SQL query testing, debugging and tuning utility; a bundle of drivers for linking to SQL databases; and Intersolv, Inc.'s PVCS Version Control software for tracking and controlling code updates.

Feature-packed upgrade

Other features in the Delphi upgrade include a compiler engine that has been tuned to produce faster code, the ability to build applications that act as containers and servers for Microsoft's OLE software component technology, forms that can be reused and a data dictionary, Urlocker said.

Delphi Client/Server Suite 2.0 will cost approximately $2,000

Borland C++ also lets developers target 16- or 32-bit Windows or DOS with their applications, officials said. Version 5.0 will encapsulate 32-bit Windows 95 controls and emulate them under Windows 3.x. This will let developers write code once and deploy them on both types of Windows, company officials said.

Version 5.0 also will include class libraries that adhere to the latest American National Standards Institute draft of specifications, the ability to use controls found in Microsoft's Visual Basic and Visual C++, and a collection of visual database development aids. Borland has broken out previously integrated programs, such as the debugger, and made them add-ons. This means developers are free to use utilities from nther vendors, company officials said.

Cunningham is an IDG News Service correspondent based in Paris.

Microsoft's Quartz gives games sparkle

By Niall McKay
LAS VEGAS

Microsoft Corp. is working on a new software developer's kit for multimedia application development environments.

The kit, code-named Quartz, will include low-level application programming interfaces that will enable multimedia CD-ROM and games developers to write full-screen, full-motion video; three-dimensional graphics; and 32-bit audio applications for Windows 95.

"This will give developers the ability to write games, applications and CD-ROMs that will run in full-screen mode and will be pretty close to television quality," said Andreas Berglund, Microsoft's international marketing manager in the personal systems division.

Quartz will be available in the second quarter next year and will be rolled into future versions of Windows 95.

McKay is an IDG News Service correspondent based in London.

Motorola, Inc. has introduced MagicPipe, a software tool kit.

According to the Schaumburg, Ill., company, MagicPipe uses messages to communicate among applications across wireless networks.

It gives developers a multiplatform tool set to develop and integrate MagicPipe-enabled application components. Messages then carry information and action requests among components on the same devices and across wireless networks.

MagicPipe was designed to create a master component that provides the logic for a particular software product.

Other components can then communicate with one another to provide application functionality, while the master component manages message routing and network system communication. MagicPipe is offered exclusively to Motorola alliance partners.

Pricing will be available in the second quarter of next year.

▶ *Motorola*
(708) 576-1000

ViewSoft, Inc. has introduced Utah 2.0, a development tool.

According to the Provo, Utah, company, Utah 2.0 lets programmers interactively develop and connect user interface and business objects.

This lets programmers create graphical user interfaces (GUI) without adding interface dependencies to program objects or writing interface code.

The product features an object-structured interface, mappers, synchronized multiple views, view embedding and inheritance.

It also has an interface-style model that provides fine control over shading, color, etching and three-dimensional appearance without programming. Style attributes can be inherited and overridden from existing styles.

Utah 2.0 ships with an object-oriented GUI-builder that includes a visual mapper/object connection tool, an interactive read/write object browser and a geometry management system.

Utah 2.0 runs on Windows and supports standard Microsoft Corp. and Borland International, Inc. C++ compilers.

Pricing for Utah 2.0 starts at $495 for the Windows 3.1 version. Microsoft's Windows NT version starts at $695.

▶ *ViewSoft*
(801) 377-0787

Imperial Software Technology Ltd. has introduced X-Designer 4.0, an interface builder for Digital Equipment Corp. Alpha systems running OpenVMS.

According to the Palo Alto, Calif., company, X-Designer 4.0 is a cross-platform user interface builder that lets users create interfaces for Unix and Windows applications from a single design.

The product generates standard code for PCs running Windows through the Microsoft Foundation Class library and for Unix systems through the Open Software Foundation's Motif. It was designed to speed application development without reliance on proprietary code.

X-Designer 4.0 can generate front ends for high-performance graphics applications, and it lets users access all of their applications from a single desktop unit.

It also gives users graphical ways to view information that incorporates digitized data.

X-Designer 4.0 runs on all major Unix and VMS platforms. Pricing starts at $3,500 for the first license.

▶ *Imperial Software Technology*
(415) 688-0200

InstallShield Corp. has announced InstallShield3, which includes an unlimited application license.

According to the Schaumburg, Ill., company, InstallShield3 is a software tool for Windows developers that lets them create an installation system for a Windows application through a point-and-click interface. The unlimited application license lets developers create an unlimited number of installation systems.

Pricing for InstallShield3 starts at $235. Current InstallShield developers can purchase a bundle of the 16- and 32-bit versions for $695.

▶ *InstallShield*
(708) 291-8421

Computerworld Editorial Calendar

Dec. 1995 - March 1996

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features & Custom Publications	Show Distribution & Ad Readership Study Issues
Dec. 4	Nov. 17	Nov. 22*	**Closer Look:** Visual Development Tools **Custom Publication:** White Paper on Service Solutions for Client/Server (part 4 of 4-part Enterprise Software Directions Series)	**Client/Server World** Chicago 12/5 - 12/7 **DB Expo** New York City 12/5 - 12/7 Starch Study
Dec. 11	Nov. 22*	Dec. 1	**CW Guide To: Messaging Software and E-mail** With e-mail going through a major architectural change to client/server, the market will have a very different shape. IS should be able to purchase products that better address company needs. **Buyers' Satisfaction Scorecard:** Market leading e-mail software **Firing Line:** Latest e-mail package from a leading vendor **Custom Publication:** White Paper on Manufacturing Acquisition Strategies A Guide for User Empowerment (part 4 of 4-part Manufacturing Series)	
Dec. 18	Dec. 1	Dec. 8	**Closer Look:** Contact Management Tools	
Dec. 25 - Jan. 2	Dec. 8	Dec. 1	**Annual Forecast Issue:** Choices abound for IS managers in 1996, but the budget and the workday will stretch only so far. Computerworld will draw on the expertise of users and industry figures to help the IS manager solve the mystery of where to invest in 1996. **Special Section:** Jobs Preview 1996	
Jan. 8	Dec. 15	Dec. 29	**Closer Look:** Storage Management	
Jan. 15	Dec. 29	Jan. 5	**Buyers Guide to Notebook Computers:** A look at technology directions in portable computers, tips for evaluating notebooks and an analysis of the strengths and weaknesses of leading notebook product lines.	Starch Study
Jan. 22	Jan. 5	Jan. 12	**Special Report:** The Best Computer Science and IS Schools	
Jan. 29	Jan. 12	Jan. 19	**Buyers Guide to Network Management:** How do today's network management packages meet corporate needs, and how will those products and corporate requirements evolve in tomorrow's distributed computing environment? What features should buyers look for, and how do products compare with each other?	**ComNet** Washington, DC 1/30 - 2/1
Feb.	Jan. 5		**Computerworld Client/Server Journal** **Extended Enterprise:** Integrating external information with existing applications **Product Focus:** Networking **Careers:** Team compensation	Networks Expo, UniForum Application Development Conf. Software Developers' Conference Database & Client/Server World AIIM
Feb. 5	Jan. 19	Jan. 26	**Special Report:** Electronic Commerce	
Feb. 12	Jan. 26	Feb. 2	**Closer Look:** OS/2 and Unix	**Networks Expo** Boston, 2/13 - 2/15 **UniForum** San Francisco, 2/14 - 2/16
Feb. 19	Feb. 2	Feb. 9	**Hot Happenings:** An IS professional's guide to upcoming conferences and trade shows.	
Feb. 19	Feb. 2	Feb. 16	**Buyers Guide to RAID:** Now accepted by corporate users as one of their primary storage vehicles, RAID is being offered at the workgroup and the enterprise levels. A look at issues such as when RAID is the best bet for an application and when it isn't. Experts share advice on how to evaluate RAID products, and offer insight into where RAID can and should go from here. **Special Supplement:** Top 25 Systems Integrators	Starch Study
Mar. 4	Feb. 16	Feb. 23	**Closer Look:** Web Usage Tracking Tools	
Mar. 11	Feb. 23	Mar. 1	**Buyers Guide to Implementing Windows 95 and Windows NT:** When is Win95 the right solution? When should you go to NT? What are the implementation issues and costs involved with each operating system? What utilities and applications are available for each?	Starch Study

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Computerworld Editorial Calendar

March - April, 1996

Issue Dates	Ad Closings		Editorial Features & Custom Publications	Show Distribution & Ad Readership Study Issues	
	Color*	B&W			
Mar. 18	Mar. 1	Mar. 8	**Closer Look:** Remote Access Software		
Mar. 25	Mar. 8	Mar. 15	**Buyers Guide to Client/Server Development Tools:** Which of the many vendor offerings are best suited for client/server development? Which features top a user's checklist when they are shopping? What benefits are corporations finding as they move to these tools?	**Software Developers' Conference** Washington, DC, 3/25 - 3/29 **Database & Client/Server World** Boston, 3/26 - 3/28	
April	Mar. 21		**Client/Server Journal** **Extended Enterprise:** The latest in Customer Service **Careers:** Learning from the Third World **Product Focus:** Databases	Networld + Interop DB Expo SIM CIO Conference Executive Technology Summit Object World	Harvey Study
April 1	Mar. 15	Mar. 22	**Closer Look:** Bandwidth Busting: tips and techniques for users who want better network performance	**AIIM** San Francisco, 3/31 - 4/3 **Networld + Interop** Las Vegas, 4/2 - 4/4	
April 8	Mar. 22	Mar. 29	**Closer Look:** Application Middleware		
April 15	Mar. 29	April 5	**Buyers Guide to Enterprise DBMS:** A look at the corporate world's options for enterprise database management, ranging from server-oriented DBMSs to those running on traditional hosts. Which category of products is right for various applications? What are the strengths and weaknesses of products within those categories?	**DB Expo** San Francisco 4/15 - 4/19	Starch Study
April 22	April 5	April 12	**Buyers Guide to Distributed Systems Management:** Vendors are promising new levels of system management — application management, desktop management and multi-platform management. A look at some of the competitors at several levels with users and experts evaluating the strengths and weaknesses of those products.	**SIM CIO Conference** Rancho Mirage, CA, 4/21 - 4/23 **Executive Technology Summit** Rancho Mirage, CA, 4/24 - 4/26	
April 29	April 12	April 19	**Special Report:** Parallel processing		

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Issue Dates	Ad Closings	Custom Publications	Show Distribution & Ad Readership Study Issues	
Dec. 4		**White Paper:** Service Solutions for Client/Server (part 4 of 4-part Enterprise Software Directions Series)	Client/Server World	Starch Study
Dec. 11		**White Paper:** Manufacturing Acquisition Strategies: A Guide for User Empowerment (part 4 of 4-part Manufacturing Series)		
Feb. 5	Nov. 24	**White Paper:** Enterprise Resource Planning (part 1 of 4-part Manufacturing Directions Series)		
Feb. 26	Dec. 29	**White Paper:** Hierarchical Storage Management (part 1of 4-part Enterprise Storage Management Series)		Starch Study
March 4	Dec. 22	**White Paper:** Application Development (part 1of 4-part Enterprise Software Directions Series)		
April 22	Feb. 23	**White Paper:** Document Imaging (part 1of 4-part Enterprise Storage Management Series)	SIM CIO Conference Executive Technology Summit	

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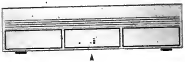

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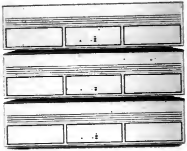

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Collaborate and Conquer

DAVID FLAHERTY

By combining groupware with workflow and videoconferencing technologies, distributors and other service firms are finding better ways to work with clients and suppliers. Here's what three companies are doing.

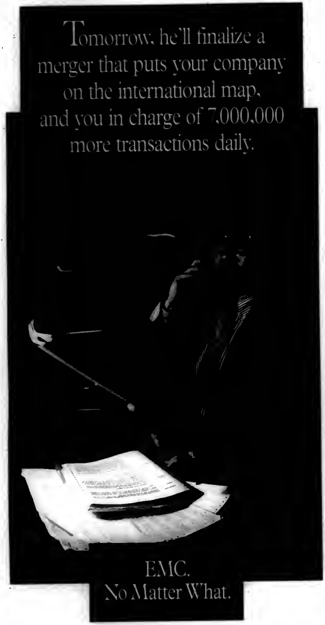
BY LINDA WILSON

Many law firms are leery about participating in the Electronic Age. But not Bullivant Houser Bailey, where a specialized application allows lawyers and clients to work on litigation together. The program has been so successful since its launch in 1992 that Bullivant has been able to lure three new clients from competing law firms, according to Don Evans, Bullivant's chief executive officer.

That's not bad in these days of stiff competition. The fact is, electronic collaboration is finally enhancing the way people work together and fostering impressive productivity gains.

In the past, electronic collaboration was limited to formal, standards-driven transactions such as purchase orders using electronic data interchange and informal messages via electronic mail. Both techniques are severely limiting by nature. But by using newer technologies such as group-

Collaborate and conquer, ***page 101***



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Collaborate and Conquer

CONTINUED FROM PAGE 99

ware, workflow or videoconferencing combined with increasingly sophisticated public networks, partners are able to contribute jointly to works in progress, including sales proposals, lawsuits and television commercials.

"Every major customer . . . [with] electronic connections is . . looking for something far more sophisticated than E-mail. They want the ability to manage projects across companies," says Larry Jolly, director of consulting services at DPI Services, Inc., a consulting, training and systems integration firm in San Jose, Calif.

GREY ADVERTISING

Take the example of Grey Advertising. Since 1994, the advertising agency has used Drums, a high-speed, digital fiber network from Sprint Corp. in Westwood, Kan. The Drums network was designed specifically to allow partners in the advertising and entertainment industries — including agencies, animation houses, computer graphics specialists and post-production facilities — to electronically collaborate on creative material.

Using a T1 (1.54M bit/sec.) link to Drums, Grey is able to collaborate with anyone on the network. To access the network, employees use Indy and Indigo2 desktop computers from Silicon Graphics, Inc. (SGI) in Mountain View, Calif. The workstations are loaded with an assortment of software programs that Sprint has integrated into a single package. The package includes a graphical user interface with multimedia capabilities designed by R/Greenberg Associates, a New York-based software developer.

The setup lets Grey employees and business partners discuss and edit full-motion video from their desktops and communicate using whiteboards. A television camera mounted on top of the SGI computers facilitates desktop videoconferencing. The system reduces lead time to complete projects and cuts down on business travel.

"A typical graphics job might take six or eight weeks from start to finish. Using Drums, we are able to cut six weeks [out of the process]. And our jobs are less expensive because we can more efficiently manage our personnel," says Buzz Warren, senior vice president at Grey.

BULLIVANT HOUSER BAILEY

Bullivant Houser Bailey uses Notes, the workgroup software from Lotus Development Corp. in Cambridge, Mass., to aid collaboration. Rather than rely on status reports, clients and their lawyers use computers to create documents, develop strategies and communicate opinions.

For example, a lawyer will send a client an electronic draft of a case strategy, which the client reads and comments on. The process continues until the client is satisfied with the end product. A dozen clients use the system.

The firm, which has offices in Portland, Ore.; Sacramento, Calif.; Seattle; and Vancouver, B.C., uses a public Notes service from Elf Technologies in Mercer Island, Wash., to exchange case-status information with clients. Elf is a software developer and a value-added network.

The software from Elf pulls information from other applications into the Notes application where the data is stored by case. The type of information stored includes case strategies, settlement discussions, budgets, time and billings and court documents.

Information from the Bullivant server is replicated to a similar Notes server at Elf, which then automatically updates servers at Bullivant's clients. Elf is the intermediary that provides software and integration services for both sides. It also manages the replication of data back and forth, making sure neither side sees information they aren't supposed to.

The electronic collaboration chops at least 15% off the time Bullivant attorneys spend on a case because they no longer write periodic status reports for clients. Evans, who is based in the Portland office, says he can't quantify that savings in dollar figures, but "some of our clients have told us it's worth a significant amount."

Marshall Industries, Inc., a $1.9 billion electronic components distributor in El Monte, Calif., also uses Notes to aid collaboration. Marshall employees need to deal with workers at the company's suppliers to respond to requests for proposals. Since February, Marshall has used Notes and a specialized workflow package to foster collaboration on bids between it and its suppliers.

"This allows for total collaboration among people and access to information when they need it" so they can follow up on bid requests, says Rob Rodin, president and CEO of Marshall.

Employees in the corporate office simply tap a PC-based Notes server, while suppliers dial in to a public Notes server at CompuServe, Inc., a value-added network in Columbus, Ohio. Notes' automation-replication feature keeps the corporate and public servers in sync. The bid process relies on a specialized workflow manager that runs on top of Notes: Quality of Work from Quality Decision Management, Inc. in Andover, Mass.

When a supplier requests a quote, the request is automatically fed into the system electronically or, if it's on paper, through optical character recognition. If the bid request is complicated, the system routes it to the appropriate people at Marshall and at the suppliers. Those involved in a specific bid work together — assisted by automated routing and deadline features — to evaluate the request, pull together a response and plan suppliers' production.

Total Collaboration: ***Rob Rodin, president and CEO of Marshall Industries, says his company's Notes-based system helps his employees work with suppliers when suppliers bid on new contracts. "This allows for total collaboration among people and access to information when they need it," he says.***

For routine requests of small amounts of product, the system responds automatically without human intervention. That leaves employees free to work on big projects.

The system is one of many that Rodin attributes to dramatic increases in productivity over the past three years. Productivity has soared from $360,000 per person in 1992 to $740,000 per person in 1995, he says. ■

Wilson is a freelance writer in Glen Ellyn, Ill.

@ **Talkback@cw.com**

How are you using electronic collaboration? Is it helping? Hurting? Let us know over the Internet at talkback@cw.com, or fax us at (508) 875-8931. Direct your comments to Editor, Management.

Lotus

Working Together

[illegible], [illegible] desk[illegible] [illegible], or even on the road. And Notes' unique replication technology lets you be part of the team, even when you're traveling. That's because Notes is the only proven, open platform for communicating, collaborating and coordinating mission-critical business processes.

Your people work around the clock. They work around the world.

They're working on the future of your business. Shouldn't Lotus Notes be working for them?

NOTES FROM THE FIELD,
BURGER KING)

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IS Managers' Bookshelf

New books, videos and CD-ROMs

A little anarchy is a good thing

David Hurst makes the case for organizational turmoil in his new book Crisis & Renewal

BY IRWIN SITKIN

CRISIS & RENEWAL: MEETING THE CHALLENGE OF ORGANIZATIONAL CHANGE
By David K. Hurst
Harvard Business School Press, Boston; 256 pages; $24.95

Here is a book written by a veteran manager who is obsessed with understanding the human behavior that underpins modern business practice. David K. Hurst has a stimulating message: Crisis is essential to the process of restoring values lost as organizations grow and prosper. He suggests organizational anarchy — destroying the company's structure creatively — is the gateway to organizational change.

I like his message enough to recommend it as a fast read. I found several good ideas for senior information systems executives responsible for implementing and managing information technology. These include creating cross-functional issues-driven teams and dispersing leadership throughout the organization. He also gives advice for entrepreneurs. Hurst handily gets readers to examine their experiences in the light of his observations. The result is a book that can be used effectively by any manager caught in the middle of organizational change.

Quickly look at the introduction and first three chapters. They discuss how entrepreneurial companies precipitate change by shattering the logic of their organization.

Skim Chapters 4, 5 and 6, which deal with the social dynamics of innovation and learning. They also describe an organizational ecocycle model and the management implications of the ecocycle. Then land hard on Chapter 7 where Hurst concludes that managers have to create contexts in which people and organizations can be self-organizing.

The book has a few stutter steps (for example, the author jams at least 20 words beginning with "re" into the first dozen pages) and a slightly ponderous academic orientation.

Hurst is currently a speaker, consultant and research fellow at the University of Western Ontario's National Center for Management Research and Development in London, Ontario. But don't be put off — there's some valuable information to be had here.

Sitkin, a former senior technology executive at Aetna Life and Casualty Co. in Hartford, Conn., is a member of the team that developed the Society for Information Management Forum for Information Executives at The Aspin Institute.

COMPUTER CRIME: A CRIMEFIGHTER'S HANDBOOK
By David Icove, Karl Seger and William VonStorch
O'Reilly & Associates, Inc., Sebastopol, Calif.; 437 pages; $24.95

This book will interest every IS manager who ever wrote a password on a Post-it note. Well-organized and indexed, it offers advice on crime prevention, hacker profiles and nitty-gritty details on using electronic mail to obtain a search warrant. Who knows how long any book can remain salient in this fast-changing field, but this is a strong resource right now.

VIRTUAL REALITY SYSTEMS FOR BUSINESS
By Robert J. Thierauf
Quorum Books, Westport, Conn.; 304 pages; $59.95

You can tell the excitement is wearing off a technology when the books about it turn turgid. Robert J. Thierauf starts with a shaky thesis — that "experiencing" business information is better than reading and viewing it — and does little to support it. The book succeeds in envisioning more for virtual reality than video games and cyberporn, but its academic style and amateurish graphics make for a tough read.

MANAGING PROJECTS IN ORGANIZATIONS: HOW TO MAKE THE BEST USE OF TIME, TECHNIQUES, AND PEOPLE (Revised Edition)
By J. Davidson Frame
Jossey-Bass, Inc., San Francisco; 247 pages; $28.95

J. Davidson Frame's revision of his fine 1987 book explains how to maintain esprit de corps in the age of downsizing and emphasizes the shift from boss- to team-oriented corporate culture. A blend of commonsense advice, scheduling strategies and anecdotes, the book succeeds because it never forgets that projects depend on people.

CLIENT/SERVER AND OPEN SYSTEMS: TECHNOLOGIES AND THE TOOLS THAT MAKE THEM WORK
By Rand Dixon
John Wiley & Sons, Inc., New York; 303 pages; $34.95

This book is aimed at IS managers considering shifting to client/server. Its strong suit is its evenhandedness; Rand Dixon assesses the technology's strengths and weaknesses without grinding any axes. The writing is uneven and open systems get short shrift, but this is a clear-eyed look at a technology that too often is treated like a buzzword.

— Reviews by Steve Ulfelder

POWER TOOLS
PERSONAL TECHNOLOGY FOR IS MANAGERS

Projects get KickStart

Experience in Software's Project KickStart helps managers at their most vulnerable point — the early stage of the project

By Jeffrey Gordon Angus

Project KickStart

Experience In Software, Inc., Berkeley, Calif.

Requires Intel 386 or higher processor and 2M bytes of free disk space

Experience shows that most projects in U.S. organizations fail to achieve their original goals More than half of those failures are the result of employees not thinking through goals, tasks and barriers before plunging into action. Now there's a new project management tool that's designed to help you succeed where most managers fail.

Don't worry, Project KickStart isn't a project management behemoth. The program, from Experience in Software, Inc., can be used as a preprocessor to a high-end project management program, but it has more value for the vast majority of projects that need good planning.

For most projects, you need 20 to 60 minutes to outline objectives, things to do and other issues. If you aren't good at this kind of planning — and this isn't a natural strength for most managers charged with planning responsibility — it's valuable to have an assistant remind you of things you should be thinking about. Project KickStart can serve as that assistant.

For the minority of projects that *do* require a heavyweight project management system or even a useful middleweight such as Microsoft Corp.'s Project, Project KickStart serves a role that none of them do: It helps you examine preconceptions and strategic goals before you start laying down the "plumbing" of a project (calendar dates, dependencies and so on). That done, you can export the polished project outline to Microsoft's Project.

Project KickStart features a very advanced, usable Windows interface. Beyond extensive drag and drop, the program is basically a wizard, a preprogrammed set of questions with on-line explanations you answer to arrive at an almost-complete end product that can be fine-tuned. The wizard takes you through a linear process of answering questions about project phases and tasks. It then moves on to goals. Note the unusual sequence: in a program based on academics' ideals, goals typically come first. Project KickStart actually asks you to examine which tasks you haven't mentioned that would support the goals.

Once you've assigned tasks to phases and staff to tasks, you can examine a library of projects — your previous ones or a bunch of decent canned ones included in the product — to look over tasks you might want to add. This feature can make continued work with the product even more efficient because most organizations' projects tend to be fairly similar.

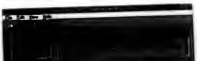
The program then takes on a persona that everyone loves to hate as it starts a dialogue about barriers to implementation. In most organizations, someone has to do this, but that person is often reviled by peers and superiors for his constant naysaying. The program asks probing questions about each thought or task that you add, and this can feel like nagging. But the end product of this skepticism is a set of focused suggestions for preventing and overcoming the barriers.

Minor flaws

The product isn't without room for improvement. While the DOS version exports to many different project management packages, Project KickStart for Windows exports only to Microsoft's Project. This means you're restricted to using it with that product or the other programs that import Microsoft's file format. And drag and drop reordering of project tasks would be a swell, though not vital, addition.

Project KickStart is useful for those who manage technology projects, because as a class of projects, they are more likely to be riddled with organizational politics than, for example, construction projects. Project management software understands things change (time, resources and so on), but it doesn't consider the treacherous political environments we work in. The question-and-answer model Project KickStart takes you through brings up key issues about support and opposition inside the organization and, I believe, leads to more realistic planning. ■

Angus is a freelance writer in Seattle.



Experience in Software's *Project KickStart takes users through o list of questions to reach the end product*

Calendar

JAN. 11 - 26

MANAGEMENT

International Association of Facilitators (IAF) Conference '96: The Art & Mastery of Facilitation. Dallas, **Jan. 11-15** — Topics include group facilitation methods, strategic planning and computer-supported facilitations. Contact: IAF Registration, Dallas (214) 248-9233.

Product Data Management Decisions. Phoenix, **Jan. 15-18** — A workshop and conference for chief information officers and information systems managers responsible for the flow of product development information. Keynote address by Roy Camblin, CIO of Oracle Corp. Fees: $295 to $1,095. Contact: The Management Roundtable, Waltham, Mass. (800) 338-2223.

Effective Methods for Information Technology Quality. Orlando, Fla., **Jan. 15-19** — The conference has two parts: an outline of the process for installing a total quality management system and the process for short-term deployment. Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

Success Strategies for Improving Software Technical Support. San Diego, **Jan. 23-25** — For software technical support executives who face increasing demand for software services and decreasing resources. Topics: "How to Make Key Technical Support Services Profitable" and "Using the Internet to Increase Efficiency." Contact: Global Business Research, New York (212) 645-4226, ext. 8012.

INDUSTRIES

Data Warehousing Strategies for Financial Institutions Conference. New York, **Jan. 17-19** — Topics include ensuring key data elements get selected for warehouses, gaining sponsorship for warehousing projects, getting prototypes running and standardizing data elements. Contact: Global Business Research Ltd., New York (212) 645-4226.

On-line Strategies for Book Publishers: Profiting from New Media Opportunities in Book Publishing. New York, **Jan. 18-19** — The conference targets CIOs and executives at publishing companies. Topics include repositioning for the new media, intellectual property in cyberspace and targeting your audience. Fee: $1,295. Contact: AIC Conferences, New York (212) 952-1899.

1996 Financial Electronic Data Interchange (EDI) Conference. Nashville, **Jan. 21-24** — Focus is on designing, implementing and upgrading financial EDI programs and electronic commerce. Speakers: Herman Cain, president and chief executive officer of Godfather's Pizza, Inc., and futurist Frank Feather, president of Glocal Marketing, Inc. Sponsored by the Treasury Management Association (TMA) and the National Automated Clearing House Association. Contact: TMA's Membership and Marketing Department, Bethesda, Md. (301) 907-2862.

TECHNOLOGIES

Firewalls and Internet Security Conference '96. Arlington, Va., **Jan. 25-26** — Sponsored by the National Computer Security Association (NCSA). Topics include evaluating firewalls, establishing a security response team and nontechnical security threats. Contact: NCSA, Carlisle, Pa. (717) 258-1816, ext. 226.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

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Steve Ulfelder, Associate Editor/ Management, Computerworld, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931.

Lotus

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Mac, [illegible]

Its robust [illegible] replication [illegible] to-the-second information to the people who need it. Whether they're across the hall or across the ocean.

Lotus Notes works the way your people work. It works the way your company works. Which is why it's working for thousands of companies worldwide. Today.

You can wait for something else, but chances are it just won't meet your needs.

FROM THE [illegible]
[illegible]EMAN'S F[illegible]N[illegible]

"[illegible] helped us assess the Oakland fire damage in under 48 hours, and earn the #1 customer approval rating. We do everything in Notes, from claims processing to tracking service levels. We've reduced our IS budget by $45 million, while delivering better service and more function. We considered using a messaging system, but Notes does so much more.

Virgil Pittman

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Conversation with Tom DeMarco

The godfather of structured analysis design is still delivering management wisdom on fostering programmer productivity — whether corporate America wants to hear it or not

BY
KATHLEEN
MELYMUKA

"The great vogue of the 1990s seems to be becoming lean and mean. Am I the only one who thinks this is dumb?"

So asks Tom DeMarco, who loves nothing better than looking through the filmy fabric of conventional wisdom to declare that, actually, the emperor is naked.

DeMarco isn't just some upstart troublemaker smashing sacred cows in the software development area for sport. Rather, he's a bona fide development guru who earned his early programming credentials at AT&T Bell Laboratories and La Cegos Informatique, a French mainframe real-time systems company. He has managed one software company and numerous projects. His pioneering w[illegible] structured analysis culminated in the develo[illegible] of the DeMarco method outlined in the book *Structured Analysis and System Specification* in 1978.

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Challenge the [illegible] er to invest some money; say what you'[illegible] ed and how you got that back plus more.

It's a heal[illegible] ude. An investment philosophy would put [illegible] ous value on not losing peopl[illegible] It's a key [illegible]

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There was something about all [illegible] man-

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In Depth

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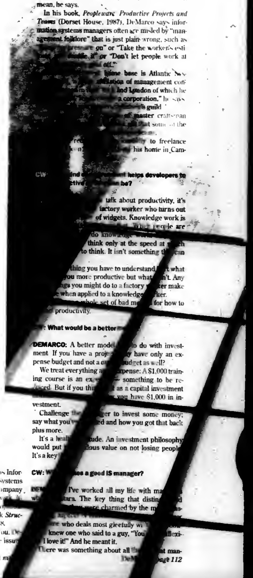

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That's why the push to lean and mean just ma[illegible] him crazy. That goal, he says in his most recent book, *Why Does Software Cost So Much?* (Dorset House, 1995), isn't only ill-advised but downright sinister. "The word [mean] describes an assortment of qualities, none of which seems to be very desirable." Talking mean is too often a prelude to acting mean, he says.

In his book, *Peopleware: Productive Projects and Teams* (Dorset House, 1987), DeMarco says information systems managers often are misled by "management folklore" that is just plain wrong, such as "[illegible] pressure on" or "Take the worker's estimate [illegible] double it" or "Don't let people work at [illegible] off."

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There was something about all th[illegible]t man-

DeM[illegible] page 112

"You couldn't be too crazy or too weird" under the guidance of a great manager, says IS management guru Tom DeMarco, because "weirdness was understood to be a capital asset."

A Conv[illegible]ation [illegible] Tom De[illegible]rco

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BY
KATHLEEN
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PHOTOS BY STELLA JOHNSON

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We treat everything a expense: A $1,000 training course is an ex — something to be reced. But if you thi it as a capital investment you have $1,000 in investment.

Challenge the ger to invest some money; say what you' ed and how you got that back plus more.

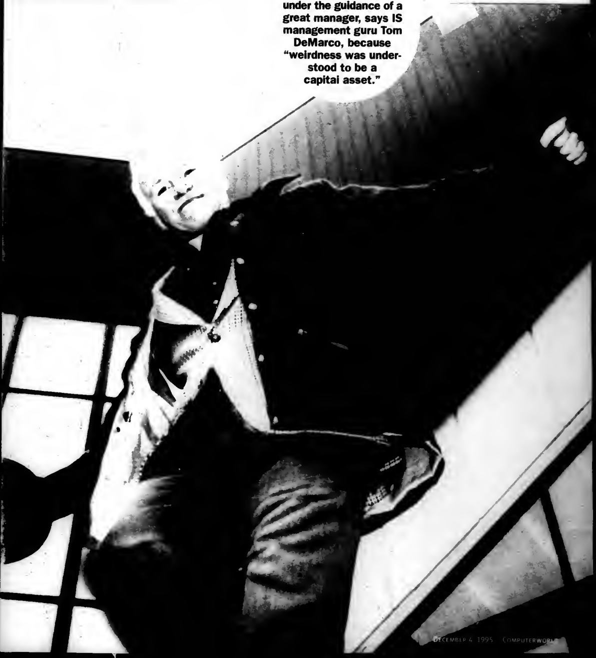
It's a heal itude. An investment philosophy would put ndous value on not losing people. It's a key

CW: W kes a good IS manager?

I've worked all my life with ma wh stars. The key thing that distin ed were charmed by the m as aspects of er one who deals most gleefully with I knew one who said to a guy, "You' nflexi ; I love it!" And he meant it.

There was something about all the at man-

DeM page 112



"You couldn't be too crazy or too weird" under the guidance of a great manager, says IS management guru Tom DeMarco, because "weirdness was understood to be a capital asset."

Lotus

[illegible]

[illegible] your company [illegible] tion it [illegible] compete. This means that your people can not only communicate, but collaborate in teams and, most importantly, build and deploy custom applications that coordinate mission-critical business processes like streamlining product development cycles and improving customer service.

Lotus Notes is here now. If you'd prefer something less, wait a while. It'll be here eventually.

DeMarco

CONTINUED FROM PAGE 108

agers that made them gleeful in the presence of the extraordinary craziness that characterized their people. You couldn't be too crazy or too weird. Weirdness was understood to be a capital asset because weird people aren't clones; they give us our edge. These managers had an extraordinary appreciation for the weird.

CW: You talk about the intense deadline pressure on programmers as being counterproductive on many levels. But what about the argument that work expands to fill the time available to get it done?

DEMARCO: That idea is Parkinson's Law, and Parkinson was a humorist, not a scientist. He didn't say it because it was true; he said it because it was funny.

Of course, there has to be a germ of truth in anything funny. The germ of truth about Parkinson's Law is that when you hate your work, the work expands to fit the time allotted. My observation is that Parkinson's Law doesn't apply to the kind of work [developers] do.

[By imposing a deadline,] you're really asking workers to make compromises with what they understand to be quality.

You can't ask for general compromises with quality. You must come up with something specific, and you need to talk with them about it. Maybe this program will be used only once, so maintainability isn't as important as it would be otherwise. You can redefine quality in this way, and then [your programmers will] go about [a project] differently.

CW: I get the feeling you think software developers would do better if people would just leave them alone.

DEMARCO: No! I don't believe that at all! Management is an enormously legitimate function — the catalyst that allows work to proceed effectively, not overhead to be trimmed.

It isn't enough to get out of [a developer's] way, but many of the things people do in the guise of management are likely to [lead to] trouble.

CW: How so?

DEMARCO: Say someone does some set of development activities well, so they make him a manager. He ends up doing the same things he did before, only now he says he's doing them to illustrate and give example. But he runs away from the scariest thing of all: the soft business of motivating, leading, coaching, helping people resolve differences.

CW: Can great IS managers be made or are they born that way?

DEMARCO: A great manager is mostly born, not made. It's largely charisma.

I was mostly a mechanistic manager. I copied some of the best things and not just the easiest. But I was never a great manager.

I don't think you can acquire those skills if you aren't naturally a leader, a people person. This thing about glee in the presence of weirdness — you can't fake that.

CW: Some of the misconceptions about what makes a good manager seem to go back to misplaced democratic ideals: the idea that a manager who isn't working down in the trenches is elitist.

DEMARCO: There's this strange attitude that work at the lowest level is intrinsically noble but management isn't. So if you need to trim costs, go for the middle.

But the middle is where we invent the company and enable it to go on to the future. At the bottom, there isn't enough power, and at the top, they've lost track of what's involved [in the work]. At the middle, you can make changes that cause a company to grow.

CW: You talk about how even good metrics can goad people into doing useless or even harmful things. Do metrics have a place in a software development environment?

DEMARCO: Metrics have a definite place in software development, just as they have a definite place in medicine. Metrics are the equivalent of blood pressure and weight. It's important to monitor things to conduct a project in a sensible way.

When I complain about the bad effects that sometimes accrue from using metrics to control development work, I want to make a distinction. There are three things to use measurement for: to understand, to predict and to control or change behavior.

If I use metrics to control — to measure — people, I'm really trying to send a message that they damn well better improve.

You get into trouble when you use measurement to control behavior. That takes you down the slippery slope of management by objectives, which is a deeply flawed concept.

CW: I know you have a problem with the team analogy for workgroups. I think the term "team" has certain macho connotations that appeal to many corporate cultures.

DEMARCO: Yeah. It's macho, male. That's part of it. One of the worst things that ever happened to American management was Vince Lombardi. He's a symbol of everything wrong with American management. You go to one of those corporate trophy stores and you can buy 20 or 30 manager plaques with Vince Lombardi on them that say things that are deeply injurious to human dignity.

CW: How so?

DEMARCO: He was a user and abuser of people. It has to do with abusing people's dignity to get them to be part of a machine you're building.

CW: Whatever you call them, how do you see teams changing in the future? Might the workgroup concept evolve into something else entirely?

DEMARCO: Something I see already happening is that the things we call teams have begun to fill the role that our towns used to fill in the 19th century.

We're community creatures. The 19th century town responded to something deep in the firmware of the human creature. You lived where your father and his father lived. You knew your neighbors and their children. You paid on credit. You knew everybody. You had roots.

There's something in us that needs this community, but now bedroom communities are all bedroom and no com-

DeMarco, *page 117*

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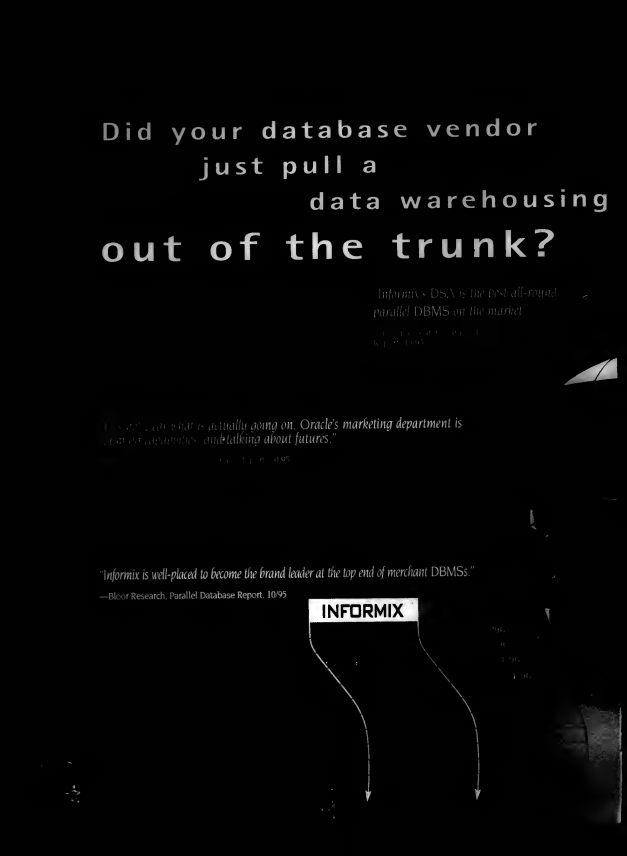

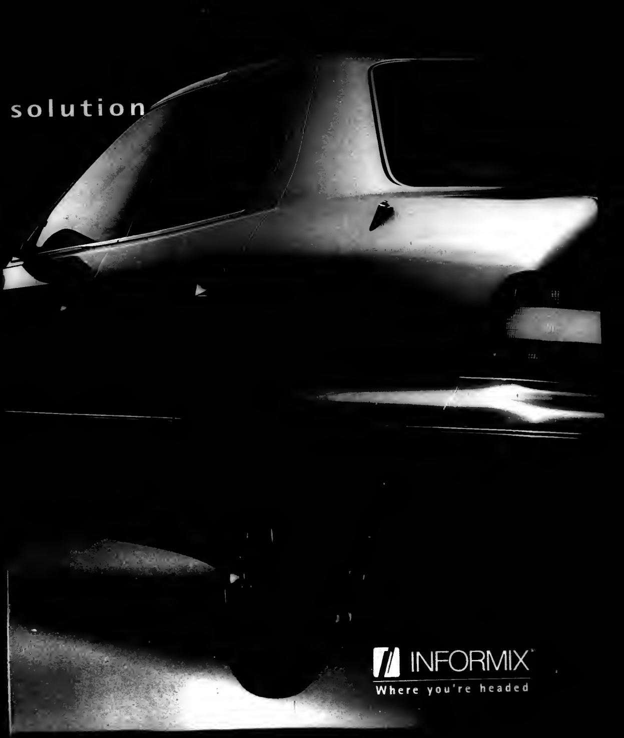
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Unix:
The Real Success Story

Your business requires flexibility, interoperability, and rapid response to change—requirements that proprietary systems were never designed to deliver. You're looking for more open alternatives to your mainframe and for more robust alternatives to your departmental systems. You want technology solutions that will give you seamless access to data, easy integration, rapid portability, and above all, a real competitive advantage.

Fortunately, such solutions are available today. Read on to hear what business users say about Unix and why it dominates the server and workstation marketplaces.

The Unix operating environment offers an alternative that puts you, not the vendor, in control of information technology decisions. The Unix alternative balances cooperative, open systems development with the advantages of a freely competitive market. With Unix, multiple vendors share an open architecture, but they compete on price, performance, and innovation. They earn the right to your business over and over again in the open market, rather than locking you into single-vendor solutions.

Unix is about choice: the freedom to choose the best hardware, the best operating system, and the best applications and development environments, and the freedom to change your mind when your business needs change. Users like choices—that's one reason why Unix installations are growing at nearly 18 percent per year in all multiuser environments, when industry growth as a whole is at just seven percent. As Janelle Hill, an information systems manager at MCI responsible for sales force technical support, says, "Moving to Unix has given us control over our own destiny."

What *Open* Really Means

There is one basic reason why Unix remains the premier enterprise operating system and the only operating system that can span your organization's computing needs from palmtops to massively parallel supercomputers: Unix is an open technology.

But it seems that every vendor now is claiming to be "open." Let's review what that word means to computing and why it's important.

Open means that the specification for a technology is published and freely available. No single vendor can control it. Anyone can use, develop, and improve the technology at any time, without permission from a vendor and with little or no capital investment. Many implementations of the specification evolve, and the input of multiple vendors is required to change the specification. In mature open technologies, conformance tests exist to certify that a specification is met. This model gives the user the ultimate flexibility and freedom of choice. If you are dissatisfied for any reason, or if a better product exists, it is a relatively trivial task to port applications to a competitive system.

In short, this market is characterized by users' ability to easily replace one vendor with another. Unix meets all of these criteria.

When a technology is truly open, it takes on a life of its own. Open technologies lead to a market characterized by rapid innovation and intense competition. Whereas a single company, no matter how large, can invest only a finite amount of money in research and development, open technologies benefit from a vast number of technologists, all working in a shared development environment that moves forward rapidly. We estimate that companies spend $1 billion annually on Unix research and development.

The World-Wide Web is one recent example of how open technologies can outperform single-vendor development. After only a few short years, the Web has become a mainstream communications tool. No single company could have afforded to launch the Web with as much success. The Web itself, of course, is built on the Internet, a fundamental open technology that has grown along with Unix.

Unix has enjoyed an open, cooperative development environment for over 25 years. As a result, it has become the most flexible, scalable, and robust operating system available today. And because Unix is open, it will continue to evolve more rapidly, and to provide better solutions to users, than any single-vendor operating system possibly can.

Unix Systems Provide Business Value

The first great benefit that Unix systems give you is the ability to replace one vendor with another, as your business needs change and as one vendor or another takes the lead in providing ground-breaking new value. No other operating system gives you that range of flexibility.

"Open systems have made our vendors much more responsive," says Hugh Brownstone, vice president of new business development for IMS America, Ltd., a division of Dun & Bradstreet. "We're able to capitalize on a Darwinian environment. It's survival of the fittest. We win, because we are able to choose the best solution available in the market."

Competition for your business leads to technical excellence in Unix systems that is unmatched by any other operating system. Eager to differentiate their products from competitors, Unix suppliers have introduced innovations in user interfaces, application development tools, and systems and network management. The robustness of its core architecture has made Unix virtually the only alternative for companies wanting to run critical applications in a distributed environment. And many of the technologies that Unix has made possible in the scientific and engineering environments—such as object database management, three-dimensional graphics, simulation technologies, and virtual reality—are becoming increasingly important to commercial users.

Competition also means superior performance at lower prices. A better price/performance ratio has, for example, allowed IMS America to provide the kind of detailed point-of-sale market data that its client pharmaceutical companies demand. Three years ago, based on a mainframe, IMS America had to make do with wholesale data, which required much less computing power. "We've been running a 1.4 terabyte farm of Unix-based systems since 1993," says Brownstone. "We just couldn't afford to do that on a mainframe. Our documentable savings are in the tens of millions of dollars."

And competition means better service. "Our mainframe is long gone—we're running everything it takes to run a retail business on Unix systems," says Mike Prince, director of information services for Burlington Coat Factory Warehouse. "The fact that we can change vendors relatively easily means our vendors are anxious to be our partners and to provide the kind of support we need."

Unix and Overall Multiuser Markets, 1994

Total multiuser systems	Unix	All operating systems
Units	83,962	153,551
Growth rate/units	17.6%	7%
Value	$6.3 billion	$19.7 billion
Growth rate/value	23.5%	-8.6%

A multiuser system is any installation with more than one device attached; this includes everything but individual PCs and workstations

Source: International Data Corp

Distributed Computing Made Real

Why are businesses moving with confidence from their glass houses to Unix systems? Because Unix is the only operating system that can rival the security and reliability of mainframe systems, yet still offer the flexibility of an open environment. No other operating system alternative can match it—that's why Unix is the hands-down market leader in mainframe replacement.

"We needed more flexibility, more control, and more rapid response to our changing business needs," says Hill about MCI's decision to move its sales support functions from a mainframe to a Unix server. "Now I'm in complete control. If there's a problem in any area, I can fix it quickly, not ask someone else to do it for me, the way I needed to in the mainframe environment."

"We didn't want to be in the business of maintaining code. We wanted to take advantage of common, off-the-shelf software," says Jim McCann, vice president of internal information services for Northrup Grumman Corp., which over the last two years has replaced its mainframe with Unix-based business systems "But these are applications that we run our business on day-to-day. We chose Unix to run them. Nothing else came close to providing the level of reliability we needed."

As organizations come down off centralized legacy systems, Unix offers the best architecture for distributed computing. By using X Window System communications and client/server protocols, you can decouple your desktop user interface from your application, so all or part of the application can run on your Unix server. That capability allows you to minimize investment in memory and storage at each desktop, while still running very powerful applications. By running applications centrally on Unix, you also eliminate desktop crashes of the application, as well as the need for decentralized (and expensive) support. X can run on multiple platforms, offering a complete range of choices for your desktop operating environment.

Unlike some desktop-centric systems, Unix enables you to partition the operating system, user interface, application, and database management system across a flexible architecture of two, three, or even more tiers, taking advantage of the capabilities of each platform in a customized fashion right for your business.

> **"We win, because we are able to choose the best solution available in the market."**
>
> [illegible]
> **development,**
> **IMS America, Ltd.**

Because Unix vendors have operated in an extremely competitive market, they have developed the security, robustness, and ease of administration required for replacing mainframes. "Our downtime has not increased at all," says Dennis Courtney, vice president of business reengineering at Dunlop Tire Corp. Dunlop has moved critical applications such as payroll, purchasing, accounts payable, and general ledger to Unix servers, and plans to replace its mainframe entirely by 1997.

Scalable Systems for Every Need

Another reason that Unix has become the operating system of choice for distributed computing is its unrivaled scalability. Unix, in conjunction with massively parallel processing architectures and/or symmetric multiprocessing architectures, is at the heart of every interactive television trial in the world—an application that quickly exceeds even terabytes of data. Compared with this commercial application, most business applications will be managed by Unix with ease, at a price/performance point that far outdoes any other alternative. In addition, Unix companies were the first to have 64-bit computing, and their operating systems will lead the way into this advanced next generation of processing power.

"We were going to require a great deal of scalability in what we chose," says MCI's Hill, who is currently implementing a sales system that will support 5,000 simultaneous users on a single Unix server. "We were not comfortable that any alternative to Unix would scale up to support all 5,000 users. With Unix, we were very comfortable."

"We close 25 percent of all checks cleared in the U.S.," says Tsvi Gal, senior vice president of information technology for Bank of America. "For the volume of computing that Bank of America requires, no other operating system can scale as well. Unix is the name of the game in non-mainframe-oriented computing."

What's more, as well as being highly scalable, fault-tolerant Unix clusters offer mainframe-class reliability. And as departmental networks increasingly are used as gateways to wide-area networks and the Internet, Unix becomes the most secure choice for even small installations.

Unix runs on more hardware platforms than any other operating system: from hand-held devices to supercomputers, on all flavors of CPU. Companies are able to take advantage of that scalability by choosing the best applications for their needs, by making downsizing a reality, and by deploying the best hardware architectures for their business

Making Networks Interoperate

Arnie Schapiro, director of information systems at Orchard Supply Hardware Stores, became a believer in open systems after his supplier of proprietary point-of-sale equipment announced that it would discontinue support "After that, I was sold on the advantages of open systems," he says. "With Unix, we have freedom of choice and aren't locked into one supplier any more."

In addition to freedom of choice, Schapiro also wanted to make use of Unix's advanced networking. "Unix network utilities made our network easy to administer," he says. "The utilities that come with Unix aren't there with other operating systems."

It's no accident that Unix provides the richest networking capabilities or that Unix is the preferred environment for companies interested in seamlessly connecting systems and networks. From the beginning, the Unix community has been defined by its commitment to interoperability, a commitment that has made Unix the launch point for all significant enterprise network technologies in the last 20 years. Here's a short list of contributions from the Unix community that have become industry standards and make interoperability a reality for users:

TCP/IP It's easy to forget that network interoperability used to be impossible unless you bought everything from a single vendor. Unix was the first operating system with which users could take a computer out of a box and, without worrying about its architecture or hardware configuration, plug it into an Ethernet network and have it communicate immediately with other devices.

When given the choice, users overwhelmingly choose the open systems alternative over proprietary network solutions. That's why TCP/IP, designed and adopted as the Internet communications protocol in 1983, has become the glue that holds enterprise systems together. It has played an indispensable role in the Internet's dramatic growth. And that's why purveyors of single-vendor solutions have begun to ship their products with TCP/IP stacks.

The X Window System In keeping with the commitment to choice, the Unix community has acknowledged, through its shared development work, users' freedom to choose other operating systems when appropriate. For example, using X, a sophisticated windowing system developed and overseen by a nonprofit, vendor-neutral consortium, you can easily connect diverse laptops, terminals, and desktop computers to Unix servers, making network-wide interoperability a reality.

SNMP and SMTP The Unix community has recognized that, if distributed networks are going to succeed, users will need a simple way to manage these networks from a central location, as well as a simple way to communicate via electronic mail across diverse networks. The Simple Network Management Protocol (SNMP) and Simple Mail Transport Protocol (SMTP), spearheaded by the Unix community, provide solutions that have become industry standards.

C and C++ The Unix community embraced these common development languages as a way to assure interoperability among different kinds of computers; these languages have since become standard environments for other operating systems. User benefits include faster application development, easily portable applications, and reduced development costs.

The World-Wide Web Originally developed by the Unix community, this graphical Internet environment has been extended to other operating systems and has become one of the most successful and most rapidly deployed network communications tools ever created.

With its tradition of open, shared development, Unix has become the core environment for new network and interoperability advances. As these advances are accepted in the market, vendors of all stripes feel compelled to provide at least a gateway to the open alternative. The open solution then becomes the common language for the enterprise network and beyond. Because of open systems, at last you have the power to demand—and receive—interoperability among diverse systems.

A Word About Standards

In the past, the Unix community has been criticized by analysts and users alike for not providing a single set of standards for all Unix operating systems. But standards bodies fail whenever they attempt to rein in competitive forces and whenever they attempt to define for users what your needs should be. Standards should not be used to build the car, only to give us the rules of the road. If vendors were forced to conform fully to a single standard rather than be allowed to differentiate their product, users would suffer—Unix would become, in essence, as limited as any single-vendor product.

> **"For the volume of computing that Bank of America requires, no other operating system can scale as well."**
>
> **[illegible] technology, Bank of America**

The real goal of Unix standards bodies is to define for users and vendors what a baseline, commodity Unix operating system should look like. Standards assure you that Unix systems are interoperable and that applications are readily portable. But they also allow for the innovation and technical excellence that a competitive, open development environment brings.

Unix systems already offer more interoperability and portability than any other operating system environment. Common networking and systems management protocols allow you to mix and match multiple Unix systems with ease. Porting applications from one Unix flavor to another takes a matter of days, rather than the months or years it takes to rewrite code from one completely different operating environment to another.

And the Unix industry is moving forward rapidly to make interoperability and portability even easier for you. Unix '95, administered by the vendor-independent X/Open Co. (and formerly known as Spec 1170 for the 1,170 application programming interfaces it includes), defines for operating systems vendors and application developers alike what commodity Unix is. All Unix vendors have conformed, or will soon do so, to the Unix '95 specification.

By developing or buying applications that use only Unix '95 extensions, you are guaranteed seamless portability from one operating system to another. But users aren't forced to buy only Unix '95—you will still have the choice of buying or developing applications that take advantage of state-of-the-art extensions that are made available by Unix vendors, in an open and freely competitive market, as a way of differentiating their products.

In this manner, the Unix industry again offers you the power to choose. If scalability and portability are the most important elements to your business, you will choose applications that comply with Unix '95; if leading-edge technology is key, you can choose applications that take advantage of new extensions introduced by a vendor that are not yet incorporated into the standard. And because of Unix's thriving community of shared development, even standard Unix '95 will continue to outstrip the innovations introduced in single-vendor markets.

Unix Is About Choice

One operating system has made distributed computing a reality. One operating system is making new forms of interactive entertainment a reality and is leading the way in new engineering and business applications.

That's Unix.

But Unix is more than all those things. Mostly, Unix is about giving you the freedom to choose the best applications and development environments, the best networking alternatives, the best hardware to meet your business needs. Unix gives you the choice of when to upgrade your systems, or even when to change your mind and install new solutions with a minimum of pain, should your business demand it.

The Unix industry is dedicated to keeping the power of choice where it belongs: with you, the user. ■

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About UniForum

Since its inception in 1981, UniForum has served as an international, vendor-independent association for developers, vendors, and end users to promote and exchange information about the benefits of open systems and related hardware, software, applications, and standards.

UniForum is committed to open systems because it provides users with a complete technology environment that supports interoperability between existing systems and new technologies. Open systems also gives users a choice in the technologies they purchase and the ability to change as their needs dictate.

UniForum is a member-supported, not-for-profit organization with more than 7,000 individual members and more than 40 corporate sponsors worldwide. UniForum's primary mission is to deliver education and information about open technologies, including Unix, TCP/IP, the X Window System, SNMP, SMTP, C and C++, the Internet, and the World-Wide Web. It does so through various programs that include the following:

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DeMarco

CONTINUED FROM PAGE 112

munity. That need has to be filled someplace else.

Workgroups are evolving into communities — filling a need that used to be filled by towns. Companies go with that because it helps them keep people. You can combat the loss of knowledge workers by building a community. Then when somebody thinks about leaving, they're leaving their friends. That's the good news.

[illegible]

The bad news is that that requires a maturity in the form of valuing people as capital assets: We've got a lot invested in this guy; it wouldn't be the same without him. [We need to think that] everybody's irreplaceable as opposed to nobody's irreplaceable.

CW: How do geographically dispersed teams fit in to this community picture? Can you have a community where people don't see each other?

DEMARCO: No. Teams have to be together. Remoteness makes the good [community aspects] impossible. Too often we name a group of people a team. They don't acquire teamhood; they have it ascribed to them.

Today we pay lip service to the team idea, but it's often a code word for being a good follower — for letting yourself be "Vince Lombardied."

CW: In your discussion of the pathology of lean and mean, your arguments that people do better in an attitude of respect and trust than in a culture of abuse and fear make a lot of sense. But in today's political climate, they smack of the "L" word. With that kind of message, how do you get invited to speak anywhere?

DEMARCO: I am persona non grata in some places — even some good places. One of my best clients was Microsoft, but they never invited me back after the *Peopleware* book. They were very troubled. They took me aside and said, "Don't say any of this antiworkaholic stuff."

In his essay, "Politics and the English Language," George Orwell said many of the things you do in politics are preceded by things you do in language that make something acceptable that wouldn't otherwise be acceptable. Firebombing peasants and forcing them out of the place they've occupied for tens of generations is "pacifying the countryside." When you talk about it that way, you create the possibility for things that couldn't exist before. You enable the doing of terrible things in the future.

I'm trying to make it impossible to use the phrase "lean and mean" and make it harder to do [inhumane] things that are done because that phrase is used.

CW: If you had to sum up your message to IS managers in a few words, what would it be?

DEMARCO: Management is intrinsically noble. Management isn't a kind of overhead that needs to be trimmed. What a manager does is the most essential thing done in a company. Managers make great work possible. There's no more respectable work done anywhere than what a great manager does.

And there's some potential for good management in most people who get appointed. Even though you aren't a natural, you can do good work anyway. I've seen people who weren't naturally great managers but who, nonetheless, were catalytic to good work, and that's what's important. ■

Melymuka is a freelance writer in Duxbury, Mass.

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Brian Clark, Senior Vice President and General Manager
Solomon Software

[redacted] "Small to mid-sized businesses see their accounting systems as critical. Our customers focus on accounting, not database administration. They need accounting software that's easy to use, maintenance free and has the full power of a relational database."

VERN: "With Scalable SQL, our system delivers superior performance and flawless data integrity. We can support any customer environment, from mobile systems to full client/server–and customers are less affected by network traffic and system overhead."

BUILT ON SCALABLE

[redacted] "Scalable SQL gives users instantaneous access to information. It provides all the advantages of database products costing three times as much. And it uses a fraction of the computing resources."

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Vern Strong, Vice President of Systems Development,
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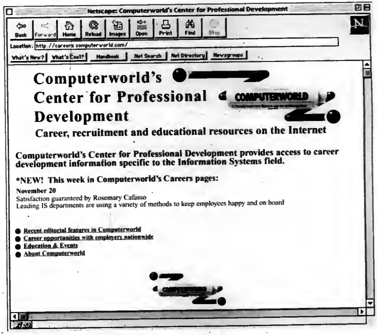

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COMPUTERWORLD
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Much ado about

Computer Careers: Special Report

TOP 25 TECHNO MBAS

These hybrid degrees can bridge the gap between IS and business. But they're not for everyone.

By Joseph Maglitta

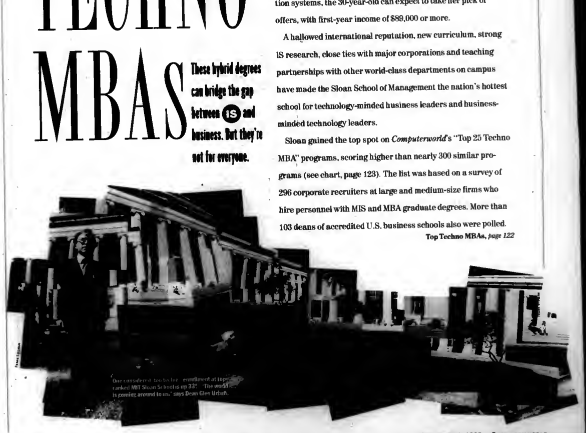
MANY DAYS WHEN Katrina Pugh Leinbach opens her mail at MIT's Sloan School of Management, a bittersweet missive awaits.

"We go and hope we get love letters," she says with a laugh, "but the folder is stuffed with recruiting letters that say things like, 'Please come to the Citibank presentation tonight. Cocktails and business attire. . . .'" She's far from complaining, mind you. Indeed, as a May 1996 Sloan graduate specializing in information systems, the 30-year-old can expect to take her pick of offers, with first-year income of $89,000 or more.

A hallowed international reputation, new curriculum, strong IS research, close ties with major corporations and teaching partnerships with other world-class departments on campus have made the Sloan School of Management the nation's hottest school for technology-minded business leaders and business-minded technology leaders.

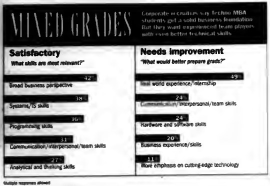
Sloan gained the top spot on *Computerworld*'s "Top 25 Techno MBA" programs, scoring higher than nearly 300 similar programs (see chart, page 123). The list was based on a survey of 296 corporate recruiters at large and medium-size firms who hire personnel with MIS and MBA graduate degrees. More than 103 deans of accredited U.S. business schools also were polled.

Top Techno MBAs, *page 122*



FRANK SITEMAN

Once considered "too techie," enrollment at top-ranked MIT Sloan School is up 33%. "The world is coming around to us," says Dean Glen Urban.



Multiple responses allowed
Source: Exclusive 1995 Computerworld MBA Survey

Reality check

The message from the business world: Hands-on experience counts. Nearly half of the 67 recruiters polled in a follow-up survey said Techno MBA programs, in general, could better prepare graduates by providing better hardware and software skills, and more real-world experience (see chart above).

"The value of an MBA program," says William Ziegler, director of campus recruiting at Andersen Consulting in New York, "is directly related to its [basis in] reality." The firm's U.S. technology practice will hire 450 MBAs this year.

It should come as no surprise that other top-ranked programs — including those at Carnegie Mellon University in Pittsburgh; the University of Texas in Austin; the University of Minnesota in Minneapolis; and the University of Arizona in Tucson — offer solid front-line opportunities. (Several first-rate business schools, including Harvard, Duke and Northwestern didn't make the list because they don't offer concentrations in information systems.)

Recruiters say that of the 289 U.S. business schools that offer Techno MBA programs, the "Top 25" offer the strongest mix of business, technical, analytical, team and communications skills and relevant work experience.

Leinbach, recruiters say, is a fine example.

Articulate, bright and ambitious, the former technology analyst would be a fine catch for any company. But as a female Sloan graduate with real-life IS experience, including a summer internship at Mercer Management Consulting, Inc., she's even more desirable to corporate suitors. "I know I'll get a job when I get out," she says confidently.

But where? That's the big question for graduates and technology managers. In IS? In a business unit? As a consultant? Business schools and IS leaders say the answer will help shape the future of corporate technology usage.

At a crossroads

Graduate degrees that combine management and IS studies have been around for a decade or more. But as the lines between business and technology continue to blur, these hybrids have become a popular training track for next-generation managers, chief information officers and even chief executive officers.

"We seem to be at a real crossroads in the industry," says James Bussey, vice president of IS at Carnival Corp. in Miami. "In the old glasshouse days, [IS leaders] needed to be schooled in the profession and their industry." But as users design and develop more systems, those who aren't using hard-core technology such as objects and data warehouses may find business-oriented training more relevant, he says.

Many observers agree. They say Techno MBA programs can serve as the long-sought bridge between IS and business units. The degree is popular with IS consultants, analysts and business process redesigners. It may even be the boost your own career needs (see story, page 124).

Still, actual numbers remain small. Techno MBAs will number only about 3,000 of the roughly 88,000 MBAs that the American Association of Collegiate Schools of Business (AACSB) says will be awarded next spring. But the schools say demand is brisker than ever, and many are projecting a strong increase in enrollment in the coming years.

A good example is the University of Texas. In two years, the school's information management program has swelled from 30 students to more than 200 — roughly 40% of the business school's enrollment, says Thomas W. Davenport, program director.

MIT's Sloan School expects to boost total enrollment to 680 next fall — a 33% jump from last year. The school created two IS tracks following a curriculum revamp last year. The school has only just started to track student choices, but it expects "rigorous demand" for "end-user" and "supplier" programs.

Sloan spokesman David Lampe says there is only one semester of required courses, "so some people are de facto in IS just by their selection of [optional] courses." Many others, he says, will formally register.

"[Employers] are fighting tooth and nail for these people," says Harvey Shrednick, director of Arizona State University's MBA/master's degree program in IS and president of the Society for Information Management (SIM). He was chief of IS at Corning, Inc. for 10 years before he left the company this summer to enter academia.

The interest in those with Techno MBAs is notable at a time when many corporations continue to shed thousands of other types of highly paid MBAs. Starting salaries for graduates from top Techno MBA programs average $53,375, a figure equal to or higher than the salaries paid for many other MBA specialties. About 40% to 50%

Top Techno MBAs, *page 124*

What makes a top MBA program?

① **A strong IS program.** It's axiomatic, but the best Techno MBA schools also boast strong undergraduate and graduate IS departments. They include the University of Minnesota, Georgia State and New York University. Carnegie Mellon adds more exotic specialties such as artificial intelligence and expert systems to its curriculum.

② **Heavy use of technology.** Top Techno MBA programs practice what they teach. They spend more than the $700-per-student average for business schools. The University of California at Irvine is the leader and spends $2,571 per student. MIT, Carnegie Mellon and the University of Texas at Austin boast state-of-the-art securities trading floors. The University of Michigan offers a 900-node Ethernet network. World Wide Web classes and business simulations let Carnegie Mellon students interact with fellow students in Japan and Sweden. Among other innovations, MIT uses virtual reality to view market research data. "We walk the talk," says Dean Glen Urban.

③ **Strong ties to industry.** MIT has signed two dozen corporate megasponsors for its "Inventing the Organizations of the 21st Century" partnership. The chairmen of Xerox Corp. and American Management Systems sit on the board at Carnegie Mellon. Get the picture?

④ **An integrated curriculum.** No good Techno MBA program is an island. The best programs offer cross-training in courses that include faculty from finance, economics, accounting, engineering and other departments.

⑤ **Good public relations.** A strong marketing and public relations effort never hurt any MBA program. To be well-known is to be well-ranked, especially among recruiters. As a result, it's tough for excellent smaller or regional schools such as Babson College in Babson Park, Mass., Bentley College in Waltham, Mass.; and the Stevens Institute of Technology in Hoboken, N.J., to crack national lists.

— Joseph Maglitta

The Top 25 Techno MBAs

RANK	School	Web page E-mail	Annual tuition[1]	Ratio of students to faculty	Class size 25 students	of working students[2]	of courses with field work[3]	of grads offered jobs[4]	Sal
1	Massachusetts Institute of Technology Cambridge, Mass. (617) 253-1000	http://web.mit.edu/sloan/www/ masters@sloan.mit.edu	$23,900	5:1	95%	NA	25%	95%	$80,000
2	Carnegie Mellon University Pittsburgh, Pa. (412) 268-2000	http://www.cmu.edu/ gsia-admissions+@andrew.cmu.edu	$21,400	6:1	0%	80%	NA	100%	$68,107
3	University of Texas at Austin Austin, Texas (512) 471-3434	http://www.utexas.edu texasmba@bus.utexas.edu	$10,000	7:1	90%	30%	50%	100%	$73,000
4	University of Minnesota Minneapolis, Minn. (612) 625-5000	http://www.umn.edu [illegible]	$12,082	15:1	10%	75%	10%	100%	$35,000
5	University of Arizona Tucson, Ariz. (602) 621-2211	http://www.arizona.edu/ bowyers@bpa.arizona.edu	$7,978	14:1	33%	70%	50%	100%	$43,000
6	University of Michigan Ann Arbor, Mich. (313) 764-1817	[illegible] [illegible]	$22,900	6:1	70%	10%	15%	100%	NA
7	University of Pennsylvania Philadelphia, Pa. (215) 898-5000	http://gopher.upenn.edu mba.admissions@wharton.upenn.edu	$21,978	45:1	40%	60%	20%	100%	$80,077
8	Purdue University West Lafayette, Ind. (317) 494-4000	http://www.purdue.edu [illegible]@mgmt.purdue.edu	$11,000	4:1	90%	90%	90%	100%	$60,000
9	University of Pittsburgh Pittsburgh, Pa. (412) 624-4141	http://info.pitt.edu mba-admissions@katz.business.pitt.edu	$23,757	9:1	50%	100%	25%	100%	$50,175
10	New York University New York, N.Y. (212) 998-4636	http://www.stern.nyu.edu/[illegible].html sternmba@stern.nyu.edu	$21,342	28:1	15%	90%	90%	85%	$62,000
11	University of Illinois, Urbana Champaign, Ill. (217) 333-1000	http://mba.cba.uiuc.edu mba@commerce.cba.uiuc.edu	$14,460	10:1	100%	80%	80%	70%	NA
12	Texas A & M University College Station, Texas (409) 845-3211	http://www.tamu.edu inquiries@[illegible].tamu.edu	$10,381	5.5:1	70%	80%	0%	100%	$33,500
13	Georgia Institute of Technology Atlanta, Ga. (404) 894-2000	http://www.gatech.edu/TechHome.html msm@mgt.gatech.edu	$17,838	5:1	50%	80%	50%	100%	$48,000
14	University of California, Berkeley Berkeley, Calif. (510) 642-[illegible]	http://www.berkeley.edu/ mbaadms@haas.berkeley.edu	$16,000	NA	90%	25%	50%	90%	$65,000
15	Rensselaer Polytechnic Institute Troy, N.Y. (518) 276-6000	http://ftp.rpi.edu cervej@rpi.edu	$16,350	12:1	80%	100%	80%	80%	$48,000
16	Ohio State University Columbus, Ohio (614) 292-8446	http://www.acs.ohio-state.edu cob-grad@cob.ohio-state.edu	$12,000	3:1	40%	80%	40%	100%	$52,000
17	Michigan State University East Lansing, Mich. (517) 355-1855	http://www.msu.edu bus18@msu.edu	$16,589	6:1	90%	10%	60%	100%	$40,000
18	University of Wisconsin, Madison Madison, Wis. (608) 263-1234	http://wiscinfo.wisc.edu [illegible]@bus.wisc.edu	$13,432	15:1	100%	30%	70%	100%	$41,000
19	University of Southern California Los Angeles, Calif. (213) 740-2311	http://www.usc.edu/Univ/indexTXT.shtml uscmba@sba.usc.edu	$18,246	26:1	10%	20%	100%	100%	$50,000
20	Georgia State University Atlanta, Ga. (404) 651-2000	http://[illegible].gsu.edu/index.html NA	$7,177	6:1	30%	92%	90%	90%	$41,000
21	University of Georgia Athens, Ga. (706) 542-3030	http://www.uga.edu/ dperry@cbacc.cba.uga.edu	$6,795	3:1	100%	25%	25%	NA	NA
22	Arizona State University Tempe, Ariz. (602) 965-3011	http://www.asu.edu/ [illegible].asu.edu	$7,968	12:1	90%	90%	95%	90%	$46,500
23	University of California, Irvine Irvine, Calif. (714) 824-5011	http://www.uci.edu/ gsm-mba@uci.edu	$13,862	NA	100%	NA	0%	90%	$50,600
24	Boston University Boston, Mass. (617) 353-2000	http://web.bu.edu/ mba@bu.edu	$19,420	5:1	30%	100%	25%	82%	$52,000
25	Northern Illinois University Dekalb, Ill. (818) 753-1000	http://www.niu.edu/ cob@wpo.cso.niu.edu	$4,152	12:1	80%	75%	50%	100%	$48,000

KEY NA = Not available

[1] Tuition for out-of-state where applicable
[2] Includes IS internships and jobs
[3] Required graduate-level IS classes that mandate involvement with industry practitioners
[4] Students who accepted an employment offer within six months after graduation

Methodology How the Top 25 Techno MBA schools were ranked

In May and June 1995, *Computerworld* surveyed more than 3,000 recruiters, primarily at large and medium-size organizations, and 304 deans of U.S. business schools accredited by the American Assembly for Collegiate Schools of Business. Response rates were 10 and 34 respectively. Recruiters were asked to rank the top MBA/IS programs based on their ability to produce IS business leaders, effective managers, consultants and successful entrepreneurs. Business school deans were asked to rank the top MBA/IS programs based on their reputation for IS scholarship, curriculum, faculty and students. The deans weren't allowed to nominate their own program. The recruiters and deans were allowed to rank a maximum of 10 programs, and their responses were given equal weight.

Source: Exclusive *Computerworld* 1995 MBA schools survey

Acknowledgments. *Computerworld* thanks the following people for their assistance in developing the research instruments for this survey: Andrew B. Whinston, professor of IS, Economics and Computer Science at the University of Texas at Austin; Anitesh Barua, assistant professor of IS, University of Texas at Austin; and Clyde Holsapple, Rosenthal Endowed Chair in MIS, University of Kentucky.

Top Techno MBAs

CONTINUED FROM PAGE 122

become consultants, lured by large national firms that offer salaries that can hit six figures.

That'a a far cry from just a few years ago, notes Charles W. Hickman, project director at AACSB. Between 1982 and 1992, the powerful St. Louis-based accrediting body had to sponsor summer "crash courses" to train thousands of B-school instructors how to teach IS. Today, Techno MBAs have become "an important emerging" specialty, he says.

The irony isn't lost on Glen Urban, dean at MIT's Sloan School. For years, many employers avoided the business program because it was "too techie." Now, Urban says, "the world is finally coming around to us."

Turbocharged career

For IS managers and professionals, the degree'a growing popularity raises new questions: For companies, is it worth an extra $30,000 a year to hire someone with a Techno MBA over someone with a technical undergraduate degree? For students, is the degree worth two years of time, $150,000 in tuition and thousands of dollars in lost wages? (Nearly all the Techno MBA programs are full time.)

Not surprisingly, schools that offer Techno MBAs say the benefits outweigh the costs. They tout the degree as a way to turbocharge a career and open new doors.

"Nobody forces people to come to these MBA programs," notes B. Joseph White, dean of the University of Michigan Business School, which was ranked sixth in the *Computerworld* survey. "In what other way would you move in two years from a $35,000-a-year job to a $70,000-a-year job?" he asks. Candidates with Techno MBAs also get "greater responsibility, exposure and more interesting work," be says.

Many graduates agree the long-term rewards justify the sacrifice. "Myself, my wife and my two children starved the whole time," says Alan Berrey of his two-year stint at Carnegie Mellon's Graduate School of Industrial Administration. Was it worthwhile? "Absolutely," says Berrey, 30, who left a programming job at IBM in Salt Lake City to go back to school in Pittsburgh.

Berrey graduated in May and had six job offers. He took a programmer/analyst job in IS at Ford Motor Co.'s customer service division in Livonia, Mich His current salary is "more than double" his old one.

The degree's value to IS managers is less clear Many agree the Techno MBA has a place in their company, but opinions vary on whether the graduates belong in IS or end-user departments. Experienced hands offer a simple metric: The more management duties and end-user contact, the better the fit for a Techno MBA.

Miley Ainsworth, director of client/server development at FedEx Corp., seeks Techno MBAs to complement his group's technology wizards. "We're trying to be more customer-focused We're leaning toward the MBAs to bring balance," he explains.

Alan Ditchfield, director of MIS at Progressive Corp., an insurer in Mayfield Heights, Ohio, agrees that candidates with Techno MBAs seem like good choices for business units. "But in IS we're looking for the technical tool bag, people who can really apply client/server, object technology, the Internet," he adds.

No guarantees

Of course, snagging a Techno MBA is no more a guarantee of success for the company that is hiring than it is for the degreeholder.

Shrednick, who says he hired a couple of dozen MBAs in his tenure at Corning, admits to hiring "a couple of misfits." The big problem? "Often the person doesn't measure up to what you originally thought you were buying," he says. He advises companies to screen and check candidates carefully.

Experienced handa say those with Techno MBAs can unsettle an IS department. For example, staffers who earn less or get passed over for promotions can resent the highly paid newcomers. And hot shots can irk less secure colleagues simply because they are strong performers.

John Otroba, human resources manager at American Management Systems, Inc., says some former IS workers "want to go back to being a programmer using MBA skills. That's a real frustration for us."

And criticism persists that Techno MBA training doesn't always provide relevant courses, skills and experiences needed for real-world success. One IS recruiter for a large manufacturer complained about the schools: "Sometimes the factory doesn't talk to the buyers enough."

Leading schools have taken the criticism to heart. Many have revamped their core curricula to include Lotus Notes, Internet-based commerce, multimedia, supply-chain automation, business process re-engineering and other new topics.

Last year, for example, Sloan revised its core program to stress cross-functional teamwork, among other things. Top schools also have redoubled their efforts to hire faculty with real-world experience and strengthened their ties to corporate partners and advisers. But providing real-life experience remains a top priority. IS students at Sloan spend one-third of their time working at local businesses such as Lotus Development Corp. and CSC Index, Inc.

Many say they believe graduates with Techno MBAs will enjoy rising demand as information technology plays a bigger role in business. In the next few years, Hickman predicts, about two dozen schools will carve out niches as top MBA/IS programs. Most others will embed IS in courses such as manufacturing and finance. "There's never going to be a time when business schools are producing lots of IS specialists," be says.

The question of where Techno MBAs fit best may become harder to answer. "What is the [information technology] group anymore?" asks Ray Hoving, IS director for Air Products and Chemicals. "As a technology leader, you really care that [information technology] is being used well in the company — not necessarily in the old organizations." If current trends quicken, the placement issue may be moot: Consultancies will scoop up most Techno MBAs.

MIT's Leinbach ultimately see herself as a liaison between a technology group and a business group. "Maybe I will end up a CIO," she muses. Nobody is betting which door she'll walk through to get there. ■

Maglitta is *Computerworld*'s senior editor of reengineering/corporate strategies.

Should you get a Techno MBA?

Advanced degrees that mix general business and information systems can indeed turbocharge your career, but they aren't a surefire guarantee for career success.

"These degrees are substantially oversold as far as what they are going to do for people's careers and lives," argues Steve McMahan, managing director at Source EDP in Boston. McMahan specializes in placing midlevel IS managers.

Experts agree Techno MBAs are best for IS workers between the ages of 25 and 30 whose passion in management, not hard-core technology.

"Degrees are less important to [those] in their 40s and 50s. If you have 20 years of experience in a particular industry, an MBA may not do very much," says Rouja Brnozowski, a New York-based IS career consultant.

Consider Clayton Beale. After five years as a programmer/analyst at Ford Motor Co., Beale decided to pursue a general MBA instead of an IS-heavy program at the University of Michigan. He took just two independent-study IS courses. Beale graduated last May and landed a job as a senior systems analyst at chemical maker Rohm & Haas Co. in Philadelphia. "There's a crossroad you come to if you're heavy into technology," he says. Layering management on technical skills gives him "the best of both worlds," he says.

Even if Techno MBA graduates can leapfrog career steps, McMahan says, that may not be wise. "Long-term success requires solid technical grounding. There are no shortcuts," he says.

—*Joseph Maglitta*

YES

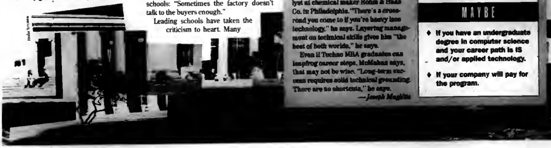
- If you aspire to the highest management ranks.
- If you are more of a generalist and could use a stronger IS foundation.
- If the degree fits into your long-term career goals.

NO

- If your goal is to be director in a highly technical area, such as research and development. A master's degree in computer science may be better.
- If you are a hard-core techie more interested in how than why.
- If you are in midcareer with experience in a particular industry.

MAYBE

- If you have an undergraduate degree in computer science and your career path is IS and/or applied technology.
- If your company will pay for the program.



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PROGRAMMER/ANALYST

Programming, design & analysis of accounting & credit balance computation software on IBM mainframes & PCs in COBOL & COBOL II/CICS employing JCL. Required one yr of DB2/SQL programming. Bachelor's in Computer Science, Computer Studies or M.I.S. 2 years exp. in job offered. $35,131.00/yr. 9-5, M-F, 40 hrs./wk. Send resume to Job Service of Florida, 701 SW 27th Ave., Room 47, Miami, FL 33135-3014. RE: Job Order Number FL-1341393

APPLICATIONS PROGRAMMER ANALYST Works in a team to develop, test and implement software & advanced programming techniques to enhance client server capability of large scale automated reservation system. Must have Bachelor of Science degree in Math, Computer Science, Engineering or a related field plus 2 yrs exp. in the same or a related job (Programmer for large scale multiplatform AS400 system using RPG400 RPGIII, CL). If no degree, must have 2 additional yrs exp. in same or related job. $45,996.00/yr. 40 hrs. Monday-Friday 8:00am-5:00pm. Send resume only to Job Service of Florida 701 S.W. 27th Ave. #47 Miami, FL 33135-3014. Job Order # FL 1345508

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ENGINEER, SOFTWARE Design, code & test s/w systems; includes providing system level technical support to customers, analyze & debug UNIX V 4.2 kernel problems & kernel memory dumps; maintain source base of various UNIX releases, dev & maintain UNIX V 4.2 pkgs. & testing & source code control. BS in CE or CS + 2 yrs. of related exp. Exp. must incl. providing kernel source level technical support for UNIX V 4.2; must also have exp. in internals of UNIX V 4, coding & debugging in the kernel of multiprocessor UNIX systems. Must have programming exp. writing Block & Streams based device drivers, & ANSI C & 386/486 assembly language. $54,000/yr. Job site: Stamford, CT. Clip ad & send w/resume to: Attn: Job Order 83156334, Program Support, 2nd Floor, Connecticut Dept. of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109

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Management Consultant: Provide system analysis services in project design, coding, testing, implementation of financial management information & commercial & manufacturing systems; develop on line batch systems application s/w on HP3000 HP900, UNIX platform, & IBM RS6000. Support HP3000 XL applications in multiple sites. Must have 4 yrs exp. in converting systems to different environments, systems analysis & programming of software applications & w/ PC386 & PC software applications, & 12 months exp. in database admin. Total exp. need not exceed 4 yrs. Proficiency reqd w/ HP3000 XL, Turbo Image, KSAM/300, Adager, MPEX/3000, query in first line support team environment utilizing 24/365 support, COBOL, QEdit Editor, Powerhouse, Quiz Reports, Superdisl, VPlus, Quick screens, JCL, & QUERY. 40 hrs/wk. $42,000/yr. Send resume to Job Service of Florida, 2312 Gulf-to-Bay Blvd., P.O. Box C, Clearwater, FL 34618-4080. Refer to J.O. #FL-1344297. If not U.S. citizen, specify current visa status.

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Title: Systems Engineer. Duties: Analyzes data processing requirements to determine electronic data processing system that will provide system capabilities required for projects or workloads & plans layout of new system installation or modification of existing system, utilizing knowledge of electronics & data processing principles & equipment. Confers with data processing & project managerial personnel to obtain data on limitations & capabilities of existing system & capabilities required for project, recommend & plan layout for type of computer & peripheral equipment or modifications to existing equipment & system, that will provide capability for proposed project or workload Requirements: M.S. degree Information Systems plus 1 yr exp. or 1 yr related exp. as Graduate Assistant in University Computer Laboratory. Salary $35,000/yr. Hours 8:30am-5:30pm, Mon-Fri, 40 hrs/wk. Contact Georgia Department of Labor, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office. Job Order # GA 5922751

APPLICATIONS PROGRAMMER ANALYST Works in a team to design, develop, test and implement specialized software systems to enhance capability of computer reservations system serving the travel industry. Must have Bachelor of Science degree in Computer Science, Engineering or a related field plus 2 yrs exp. in the same or a related job (Programmer in AS400 for large scale, multi-platform system using RPG400, RPGIII and CL languages). $3813.00/mo. 40hrs Monday-Friday 8:00-5:00pm. Send resume only to Job Service of Florida, 701 S.W. 27th Avenue, 847 Miami, FL 33135-3018. Job Order #FL 1345515

PROGRAMMER/ANALYST to design, develop, analyze and program in C, C++, SQL, Sybase and Oracle in UNIX environment for application systems; design efficient parallel algorithms, compiler design and graphic simulation of network systems, client/server design and programming using object oriented methodologies. Require M.S. in Computer Science. Coursework must include Database Design, Computer Graphics, Computer Networks, Software Engineering, Algorithm Analysis and Structured Programming Languages. Salary: $40,000 per year. 8:30 am to 5:30 pm M-F. Apply by resume to: Job Service of Florida, 2810 Sharer Road, Suite 30-B, Tallahassee, FL 32312. Job Order number FL-1341646

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SOURCE: Skill Survey of Computerworld's Audience, August 1994

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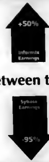

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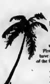

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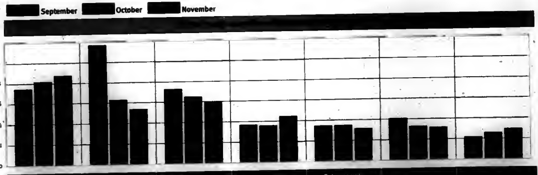

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Time to get tough

If you want to rein in backdoor purchases of hardware and software, you need a get-tough policy

By Alan R. Earls

DON BARKER,
Associate Professor of Information Science
Gonzaga University, Spokane, Wash.

> **"I know right away when someone has installed Windows 95."**

Barker knows because Microsoft Corp.'s 32-bit operating system usually crashes his network server. That isn't the fault of Windows 95; it's just that the network, which serves some 1,000 users at the school of business, isn't yet configured to support it.

Like many other information systems executives, Barker faces the challenge of keeping order in an inherently chaotic environment — in essence, closing the barn door after the horses have wandered off. Users want the freedom to select hardware and software, and the relatively low cost of many items makes it easy to hide such items under discretionary budgets. But for IS, that means increased heterogeneity among systems, additional support problems, more crashes and, sometimes, a dilution of the funds available for planned mission-critical items.

THEO FORBATH,
Consultant
Northeast Consulting Resources, Boston

> **"The key is to set a policy and put teeth in it."**

"It is a question of determining at what level to centralize and what level to decentralize," Forbath says. "There is obvious value in the buying-power leverage you get from centralizing, not to mention the benefits of commonality and interoperability." Still, any policy designed to control how hardware and software is acquired must meet the needs of the organization. Several managers warn that establishing policies — and enforcing them can be painful.

CHARLES PERUCHINI,
Director of IS
Superior Industries, Van Nuys, Calif.

> **"Our policy is that you can run but you can't hide."**

The manufacturer of alloy automobile wheels is one firm where termination is an option, albeit a remote one. "We found that despite our stated corporate policy, someone went and got authorization from a vice president to buy a software package," Peruchini says of one incident.

In alliance with the corporate purchasing director, "we found the culprit and met with him to explain the policy," Peruchini says. "We said to him, 'It is very clever of you to circumvent our policy, but as far as we are concerned, that dog don't hunt.'" Peruchini then reviewed the policy with the vice president who had been too free with his signature.

However, after slapping hands, Peruchini found that the software made sense, so the user was allowed to keep it.

For the most part, Peruchini says, Superior's policy — supported by top management — has worked. The backdoor is closed. The policy centralizes all purchasing in Peruchini's hands and flatly prohibits employees' bringing any unapproved software onto the premises. But he also has gone to great lengths to persuade people to suggest products he should acquire.

"We've even gone a step further to bring attention to the policy. When a user signs up for network access, this policy is printed right above the signature line. And it is also displayed as a message from the chairman when you first log in at the beginning of each week," Peruchini says.

Not content to be merely reactive, Peruchini says his department conducts occasional surprise software audits. "You'd be amazed at the things we find," he says.

ROBERT BEST,
Chief Information Officer
Provident Life and Accident Insurance Co., Chattanooga, Tenn.

> **"We run into individuals who are convinced they are better able to come up with solutions than we are."**

Provident started off with the backdoor partly closed — a clearly defined technical infrastructure was in place, and the company had good general rules about IS operations — but unauthorized acquisition problems haven't been eliminated entirely. In one instance, an individual actually built his own hardware — about a dozen PCs and a jury-rigged LAN. However, Best says, "we haven't had problems as big as some companies' because we did have a strong infrastructure in place and most of the businesses are pretty well adapted to it." Still, a few "renegades" are a few too many, he says, and Best says he supported the formation of a companywide technology steering committee of senior managers. That body has come up with more than a dozen principles to which all departments are now expected to adhere when making purchasing decisions.

Best says that approach — starting at the top and getting management buy-in — is critical for any organization hoping to reassert control over IS purchases. "I've heard of some companies making infractions a firing offense," Best says. "We don't want to go that far because we are making progress, and this is truly a partnership environment."

KAREN FEDELE,
Vice President
Purchasing Management Association, Boston

> **"If people like Bill Gates didn't produce consumer demands, we would all still be running 8088s with 512K RAM."**

Fedele, who is also national contracts manager at Thomson Corp., says purchasing has a role in enforcement, but she advises IS managers to recognize that the temptation for users to supplement their wares won't go away. "If your user base is fairly savvy, they will be particularly determined to get the latest versions of things, so you should be proactive and try to have an acquisition plan in place. Be ready to deal with the bugs and the problems," she adds. ■

Earls is a freelance writer in Franklin, Mass.

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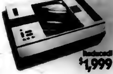

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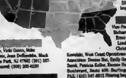

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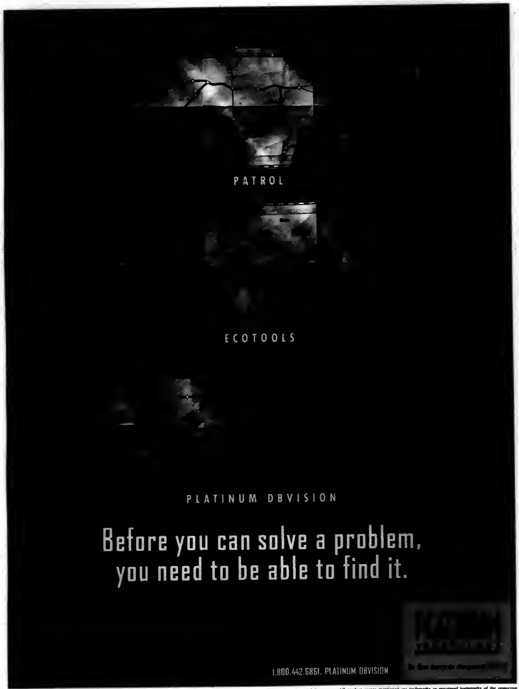
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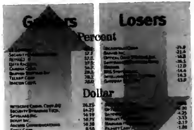
Dec. 1 Stock Ticker


Gainers
Losers
Percent
Security Dynamics Tech. 97.7
Retix (L) 37.5
Data Race Inc. 37.5
Cambex Corp. 34.7
Telebit Corp. 28.1
Inacom Corp. 28.0
Optical Data Systems Inc. -16.8
BGS Systems Inc. -14.4
Dollar
Netscape Comm. Corp. (H) 26.25
Security Dynamics Tech. 16.25
Spyglass Inc. 14.50
Intuit Inc. 10.75
Ascend Communications 10.50
Shiva Corp 9.50
US Robotics 8.75
Adobe Systems Inc. (H) 7.38
-5.00
-4.25
-3.13
-3.13
-1.88
-1.75
3COM Corp. -1.50

Spontaneous combustion

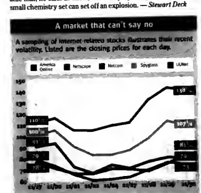
In the middle of the holiday shopping season, it appeared Wall Street bought itself a chemistry set and started experimenting with Internet-related companies. Decant a portion, stir, observe. Add the portion back bit by bit, shake up, observe.

For example, in the two days before Thanksgiving, several Internet-related companies saw their stock prices vaporize. **Netcom On-Line Communications Services, Inc. (NETC)**, **Spyglass, Inc. (SPYG)** and **UUNet Technologies, Inc. (UUNT)** all dropped more than 20%. Even market darling **Netscape Communications Corp. (NSCP)** lost more than 10% of its value. Market analysts pinned the losses on a *New York Times* article that theorized that market short sellers were artificially pumping up stock prices in this specialized segment. A week later, the stocks were back to, or above, their pre-shake-up prices. The market growth is attractive, said Greg Curhan, an analyst at Volpe, Welty and Co. in San Francisco. "No other sector has experienced 300% gains in the last year, so the demand for Internet-related stock is huge," he said.

The "gee-whiz shine" of the Internet measures into the mix, said Nate Zelnick, an analyst at Jupiter Communications, Inc. in New York. After "years of simmering hype about the information highway, the Internet has become the central repository for investors betting on future technology." And when stock prices gain so much so quickly, it becomes a "totally emotional system," Zelnick said. "Greed and fear" become part of the volatile mix, he said. In short, with the proper ingredients, even a small chemistry set can set off an explosion. — *Stewart Deck*

A market that can't say no

A sampling of Internet-related stocks illustrates their recent volatility. Listed are the closing prices for each day.



*Doesn't reflect stock split price

Exch	52-Week Range			Dec. 1 Close	Wk Net Change	Wk Pct Change
COMS	53.63	20.15	3COM Corp.	43.38	-1.50	-3.3
AIT	56.38	38.75	Ameritech Corp. (H)	55.00	-0.25	-0.5
APTS	15.00	6.75	Apertus Tech.	10.25	0.19	1.9
T	67.13	47.75	AT&T (H)	66.38	1.88	2.9
ASND	74.00	7.00	Ascend Communications	80.50	10.50	17.5
BNYN	19.75	6.00	Banyan Systems Inc.	11.25	2.50	28.5
BNET	50.00	36.25	Bay Networks Inc. (H)	43.63	1.50	3.5
BEL	65.63	48.50	Bell Atlantic Corp	64.25	0.50	0.8
BLS	39.88	25.50	BellSouth Corp. (H)	39.88	1.00	2.6
BBN	40.00	12.63	Bolt, Beranek & Newman	39.25	4.38	12.5
BRKT	25.50	9.75	Brooktrout Technology	24.25	1.50	6.6
CS	87.75	37.38	Cabletron Systems	80.88	3.88	5.0
CSCC	86.00	23.00	Cascade Communications	82.50	5.75	7.5
CGRM	25.13	12.25	Centigram Communications	21.50	0.00	0.0
CSCO	89.38	29.63	Cisco Systems Inc	82.00	3.88	5.0
CLIX	11.50	6.13	Compression Labs Inc.	7.63	0.88	13.0
CMNT	12.75	6.75	Computer Network Tech.	6.06	-0.06	-4.0
XCOM	14.50	8.38	CrossComm	12.25	-0.50	-3.9
DIGI	88.00	26.88	DSC Communications	39.88	5.00	14.3
FORE	63.75	25.50	FORE Systems Inc.	58.75	6.75	13.0
GDC	35.88	9.75	General DataComm Inds.	19.63	1.88	10.6
GSX	47.50	30.00	General Signal Networks	33.13	1.50	4.7
GTE	45.38	30.00	GTE Corp. (H)	43.50	0.88	2.1
MCIC	27.25	17.75	MCI Communications Corp	26.50	-0.38	-1.4
MICM	15.50	3.50	MICOM Communications Corp	10.00	1.25	14.3
MNPI	26.75	8.13	Microcom Inc.	25.00	1.00	4.2
NETM	27.75	12.25	NetManage Inc.	25.50	-0.06	-0.3
NTRX	50.50	3.63	Netrix Corp	4.88	0.13	2.6
NCDI	12.00	5.75	Network Computing Devices	8.75	0.13	1.4
NWK	42.00	19.75	Network Equipment Tech.	22.88	-0.13	-0.4
NETG	46.50	19.75	Network General	40.50	3.00	8.0
NWTH	41.88	7.25	Net Worth Inc.	41.75	0.13	0.3
NN	44.50	25.00	Newbridge Networks Corp. (H)	42.25	0.50	1.2
NT	41.00	31.75	Northern Telecom Ltd	40.25	2.50	6.6
NOVL	23.25	15.75	Novell Inc	18.50	0.31	1.7
NYN	50.38	35.88	Nynex Corp. (H)	49.25	-0.63	-1.2
OCTL	42.63	17.75	Octel Communications Corp.	32.75	3.63	12.4
ODSI	43.75	10.50	Optical Data Systems Inc.	24.75	-5.00	-16.8
PCTL	39.50	9.50	PictureTel Corp.	37.25	2.00	5.6
PTON	10.75	4.75	Proteon Inc.	7.81	0.56	7.8
RACO	7.88	5.00	Racotek Inc.	5.88	0.13	2.2
RETX	3.50	1.88	Retix (L)	2.75	0.75	37.5
SFA	34.88	11.50	Scientific Atlanta Inc.	16.13	0.25	1.6
SHVA	76.25	27.00	Shiva Corp	75.25	9.50	14.4
SBC	57.75	38.63	Southwestern Bell Corp	54.75	1.00	1.9
FON	40.25	25.88	Sprint Corp. (H)	40.25	0.63	1.6
SMSC	31.63	12.50	Standard Microsystems Corp	20.50	-1.00	-4.7
STRM	82.00	25.75	StrataCom Inc.	73.00	7.00	10.6
TBIT	8.13	2.50	Telebit Corp.	5.13	1.13	28.1
USRX	108.50	38.75	US Robotics	108.50	8.75	8.8
USW	48.38	30.38	U S West Inc.	51.25	0.25	0.8
XIRC	25.00	6.88	Xircom	13.75	1.88	16.5
XLGX	78.00	15.50	Xylogics Inc.	68.75	3.06	4.7

Exch	52-Week Range			Dec. 1 Close	Wk Net Change	Wk Pct Change
AALR	9.63	3.63	Advanced Logic Research	7.25	0.25	3.6
AAPL	50.13	33.63	Apple Computer Inc.	37.63	-1.00	-2.6
ASTA	19.13	7.50	AST Research Inc.	9.50	1.00	11.8
CPQ	50.75	31.13	Compaq Computer Corp.	47.50	-0.25	-0.5
DELL	49.50	18.50	Dell Computer Corp	41.50	1.63	4.1
GATE	37.50	16.00	Gateway 2000 Inc.	26.50	-4.25	-13.9
HWP	96.63	46.00	Hewlett Packard Co.	81.88	-3.13	-3.7
MUEI	29.88	6.38	Micron International Inc.	15.75	-1.13	-7.6
NIPNY	75.13	55.13	NEC America	64.50	3.63	6.0
SGI	45.63	27.50	Silicon Graphics	35.63	1.00	2.9
SUNW	94.75	39.88	Sun Microsystems Inc	84.50	4.00	5.0

Exch	52-Week Range			Dec. 1 Close	Wk Net Change	Wk Pct Change
AMH	13.63	6.63	Amdahl Corp	9.56	-0.25	-2.5
CNX	8.13	3.63	Convex Computer	4.63	0.13	2.8
CYR	39.25	24.63	Cray Research Inc	33.88	1.75	5.4
DGN	13.88	6.75	Data General Corp	12.13	0.25	2.1
DEC	50.88	31.13	Digital Equipment Corp.	58.00	5.00	9.4
IBM	114.63	88.88	IBM	95.75	-0.50	-0.5
MDCD	12.75	5.00	Meridian Data Inc.	11.63	0.75	6.9
NETF	8.38	4.25	NetFrame	5.75	0.38	7.0
SQNT	25.38	14.13	Sequent Computer Sys.	15.75	-0.50	-3.1
SEQS	10.00	3.13	Sequoia Systems Inc	5.50	0.25	4.8
SRA	39.88	33.00	Stratus Computer Inc.	33.50	2.00	6.3
TDM	19.75	10.00	Tandem Computers Inc.	12.00	0.50	4.3
TRCD	6.50	2.88	TriCord Systems	3.06	-0.13	-3.9
UIS	13.63	5.50	Unisys Corp	6.50	0.38	6.1

Exch	52-Week Range			Dec. 1 Close	Wk Net Change	Wk Pct Change
ADBE	70.00	27.25	Adobe Systems Inc. (H)	66.88	7.38	12.4
AMSWA	8.75	2.50	American Software Inc.	6.13	-0.38	-5.8
APLX	39.75	9.75	Applix Inc.	39.75	1.50	4.2
ARSW	80.75	31.25	Arbor Software	40.75	4.00	17.3
ACAD	53.00	31.25	Autodesk Inc	35.63	-0.13	-0.5
BACH	7.88	2.00	Bachman Info. Systems	6.69	0.81	13.8
BGSS	42.00	22.00	BGS Systems Inc.	35.00	-5.88	-14.4
BMCS	51.50	30.50	BMC Software Inc	40.88	5.25	14.7
BOOL	38.50	24.50	Boole & Babbage	35.75	0.13	0.4
BORL	30.63	4.00	Borland Int'l Inc.	18.00	2.13	13.4
CESH	5.75	1.38	CE Software	3.19	1.38	75.9
CYE	33.75	13.00	Cheyenne Software Inc.	23.50	2.50	11.9
COGNF	38.75	12.75	Cognos Inc.	39.75	6.75	50.5
CA	62.88	26.75	Computer Associates (H)	62.88	5.00	8.6
CVN	14.38	3.00	Computervision Corp	12.50	0.75	6.3
CPWR	43.00	17.50	Compuware Corp	21.00	0.75	3.7
CSRE	25.75	7.25	Comshare Inc.	24.50	1.00	4.5
COSFF	19.50	10.13	Corel Corp	16.50	-0.25	-1.5
DWTI	50.75	9.00	DataWare Technologies Inc	11.25	-0.50	-4.3
DSLGF	32.75	14.13	Discreet Logic Inc	30.50	2.50	8.9
FILE	31.00	23.00	FileNet Corp	42.75	-1.88	-4.2
DDDDF	8.25	5.50	4th Dimension	4.00	-0.38	-8.6
FTPS	35.50	10.75	FTP Software Inc.	33.38	2.50	9.7
GSOF	26.00	9.13	Group 1 Software	10.50	-1.00	-8.7
GPTA	13.63	6.50	Gupta	6.50	-0.88	-11.9
HOGN	12.00	6.63	Hogan Systems Inc.	9.50	0.00	0.0
HYSW	50.75	31.25	Hyperion Software Corp	44.63	0.13	0.3
IRIC	18.63	10.00	Information Resources	12.13	1.75	16.9
IFMX	34.50	12.75	Informix Corp	30.88	0.38	1.2
INGR	18.50	7.50	Intergraph Corp.	17.63	1.06	6.4
LEAF	12.63	2.88	Interleaf Inc.	12.00	1.00	9.1
ISLI	39.75	8.75	Intersolv Inc.	10.63	0.63	6.3
INTU	89.75	30.63	Intuit Inc.	81.75	10.75	14.8
MGICF	11.50	3.63	Magic Software Enterprises	8.13	0.50	6.6
MANU	20.50	6.75	Manugistics Group Inc.	17.13	-2.13	-11.0
MAPS	20.00	12.75	MapInfo Corp.	19.50	0.50	2.6
MATH	7.50	3.88	MathSoft	5.38	0.00	0.0
MCAF	52.00	9.13	McAfee Associates	46.50	6.63	59.5
MENT	22.88	12.50	Mentor Graphics	19.63	1.75	9.8
MIFGY	14.50	8.63	Micro Focus	9.13	-1.00	-9.8
MGXI	13.88	5.13	Micrografx Inc.	11.63	0.25	2.2
MSFT	109.75	58.75	Microsoft Corp	88.63	-1.13	-1.3
ORCL	48.75	24.75	Oracle Corp	44.50	-0.50	-1.1
PMTC	70.50	37.25	Parametric Technology	68.75	3.88	6.0
PARQ	22.75	6.63	ParcPlace Systems Inc	11.13	1.38	14.1
PSFT	47.00	16.75	PeopleSoft	41.50	1.75	4.4
PTEC	14.38	6.13	Phoenix Technologies	12.25	0.75	6.5
PSQL	50.88	4.88	Platinum Software	6.44	-0.81	-11.2
PLAT	26.00	15.50	Platinum Technology	16.50	0.94	6.0
PRGS	35.25	16.88	Progress Software Corp	31.00	-0.88	-2.7
RNBO	26.75	11.75	Rainbow Technologies Inc	22.50	-0.63	-2.7
ROSS	7.75	2.19	Ross Systems	5.25	0.00	0.0
SDTI	32.00	7.00	Security Dynamics Tech	32.88	16.25	97.7
SKEY	51.75	19.13	SoftKey International Inc.	28.94	-0.31	-1.0
SPCO	5.75	2.88	Software Publishing Corp	3.25	-0.63	-16.1
SOTA	12.50	6.25	State of the Art	10.50	0.50	5.0
SSW	58.63	29.63	Sterling Software Inc	38.63	4.00	11.6
SDRC	21.50	4.63	Structural Dynamics Research (H)	21.38	1.88	9.6
SYBS	55.00	19.88	Sybase Inc.	35.38	2.13	6.4
SYMC	33.25	15.50	Symantec Corp	27.00	4.63	20.7
SNPS	38.50	19.75	Synopsys	35.25	1.00	2.9
SSAX	45.75	13.88	System Software Assoc.	50.75	1.50	3.0
SYSF	18.13	6.75	SystemSoft Corp	13.50	-1.25	-8.5
TRUV	10.13	2.00	Truevision Corp	7.38	0.50	0.9
VIEW	21.75	7.88	ViewLogic Systems	11.25	0.13	1.1
VMRK	31.50	6.25	VMark Software Inc.	6.50	-0.13	-1.9
WALK	9.75	4.63	Walker Interactive Systems	7.63	0.50	7.0
WALL	55.50	14.50	Wall Data Inc.	23.50	-1.00	-4.1
WANG	19.50	9.13	Wang Laboratories Inc.	17.69	1.06	6.4

Exch	52-Week Range			Dec. 1 3 pm	Wk Net Change	Wk Pct Change
AMER	44.75	9.13	America On-Line	39.88	5.44	15.8
NETC	91.50	19.88	Netcom On Line	71.00	7.00	10.9
NSCP	135.75	45.75	Netscape Comm. Corp. (H)	150.75	20.75	26.0
QDEK	37.50	1.94	Quarterdeck Corp	33.63	5.63	20.1
SPYG	112.00	26.50	Spyglass Inc.	108.75	14.50	15.2
UUNT	98.75	21.75	UUNET Tech	78.50	6.75	9.4

Exch	52-Week Range			Dec. 1 3 pm	Wk Net Change	Wk Pct Change
AMD	39.25	19.63	Advanced Micro Devices (L)	19.63	-0.63	-3.1
ADI	39.50	20.00	Analog Devices Inc	36.25	4.38	13.7
CHPS	15.88	6.25	Chips and Technologies	10.00	1.75	21.2
CRUS	51.13	10.50	Cirrus Logic	27.75	1.50	5.7
CY	37.75	10.50	Cypress Semiconductor Corp	15.13	0.00	0.0
INTC	78.50	28.75	Intel Corp	61.06	-1.31	-2.1
LSI	62.50	18.25	LSI Logic Corp	41.13	1.50	3.8
LSCC	43.00	15.81	Lattice Semiconductor	35.00	1.13	3.5
MCRL	17.50	11.75	Micrel Semiconductor Inc	16.50	1.50	10.0
MU	94.75	39.00	Micron Technology	52.63	4.00	8.2
MOT	82.50	51.50	Motorola Inc	60.50	-0.38	-0.6
NSM	33.63	18.50	National Semiconductor	21.13	0.25	1.2
SERA	28.75	6.63	Sierra Semiconductor	10.50	1.25	13.5
TXN	83.75	42.75	Texas Instruments	55.25	1.75	3.3
VLSI	39.13	10.63	VLSI Technology	21.25	2.25	11.8
WWTK	4.88	1.75	Weitek	3.38	-0.25	-6.9
WDC	22.13	13.13	Western Digital Corp	16.00	0.13	0.8
XLNX	55.50	18.13	Xilinx	51.00	1.88	3.9
ZLG	44.13	28.50	Zilog Inc.	34.75	4.25	14.2

Exch	52-Week Range			Dec. 1 3 pm	Wk Net Change	Wk Pct Change
APCC	25.88	9.38	American Power Conversion	10.50	0.75	7.6
ADPT	42.25	19.88	Adaptec Inc.	40.50	5.63	13.8
BTEC	22.75	14.75	BancTec Inc.	19.75	0.00	0.0
CBEX	13.13	3.50	Cambex Corp	8.25	2.13	34.7
CGN	6.63	1.50	Cognitronics Corp	6.13	0.13	2.1
CNR	23.13	9.00	Conner Peripherals	22.75	1.13	5.3
CREAF	14.50	5.88	Creative Technologies Inc	9.50	0.50	5.6
RACE	13.13	3.50	Data Race Inc	5.50	1.50	37.5
DTM	9.50	4.50	Dataram Corp	7.25	0.38	5.5
EMC	27.38	13.00	EMC Corp	17.50	0.75	4.5
EMLX	58.50	10.00	Emulex Corp	13.25	-1.00	-7.5
ESCC	26.00	11.25	Evans & Sutherland (H)	25.75	1.50	6.1
EXBT	22.13	10.00	Exabyte	12.50	1.13	9.9
IISLF	4.25	1.88	Intelligent Info. Systems	2.25	-0.38	-14.5
IOMG	44.13	2.88	Iomega Corp. (H)	47.25	3.38	10.6
IPLSA	7.88	2.00	IPL Systems Inc	3.13	-0.19	-5.8
KMAG	74.88	22.25	Komag Inc.	52.25	5.75	12.4
MXTR	7.25	1.88	Maxtor Corp	6.31	0.00	0.0
MLIS	11.50	3.00	Micropolis Corp	3.13	-0.88	-21.9
MTSI	47.50	13.50	MicroTouch Systems Inc	25.00	-0.25	-1.0
PEAK	31.75	14.00	Peak Technology Group	28.25	1.50	5.6
PNCL	39.50	8.75	Pinnacle Micro Inc.	27.75	0.50	1.8
PTNX	38.75	16.00	Printronix Inc	18.50	0.00	0.0
AQM	8.63	3.75	QMS Inc.	4.25	0.25	6.3
QNTM	28.50	13.75	Quantum Corp	18.88	0.50	2.7
RDUS	15.00	2.00	Radius Inc.	1.88	-0.50	-21.4
SEG	54.00	22.88	Seagate Technology	51.75	1.88	3.8
STK	33.75	17.88	Storage Technology	26.50	0.13	0.5
TEK	61.88	31.50	Tektronix Inc	53.75	-1.13	-2.1
XRX	140.75	50.63	Xerox Corp. (H)	137.50	-1.50	-1.1

Exch	52-Week Range			Dec. 1 3 pm	Wk Net Change	Wk Pct Change
AMSY	31.75	15.88	American Mgmt. Systems	30.00	-0.63	-2.1
ANLY	33.00	10.00	Analysts Int'l	30.50	0.00	0.0
AUD	79.88	52.50	Auto Data Processing	79.88	3.75	4.9
CATP	61.00	16.75	Cambridge Tech. Partners	52.25	-1.00	-1.9
CEN	47.50	23.50	Ceridian Corp	41.75	-0.63	-1.5
CDO	55.00	20.00	Comdisco Inc.	33.00	0.56	1.7
CHRZ	34.50	8.88	Computer Horizons (H)	33.25	2.75	9.0
CSC	74.50	45.00	Computer Sciences	71.75	1.88	2.7
TSK	16.50	7.75	Computer Task Group	19.13	0.13	0.7
CPU	44.50	12.50	CompUSA Inc.	36.50	-0.63	-1.7
CDAT	17.00	5.50	Control Data Systems Inc. (H)	17.00	2.25	15.3
EGGS	14.25	6.63	Egghead Discount Software	8.19	1.06	16.9
GME	51.50	36.00	General Motors E (EDS)	50.88	1.75	3.5
INAC	15.25	6.88	Inacom Corp	13.13	2.88	28.0
INEL	14.63	6.25	Intelligent Electronics (L)	6.50	-0.81	-11.1
MSEL	8.88	3.88	Merisel	4.25	-0.75	-15.0
MICA	15.00	8.13	MicroAge Inc.	8.25	-0.25	-2.9
PAYX	47.00	33.25	Paychex	45.25	2.63	6.2
PMS	44.25	37.75	Policy Management Sys.	44.50	0.25	0.6
REY	36.75	22.25	Reynolds and Reynolds	37.75	0.50	1.0
SEIC	30.50	16.75	SEI Corp	21.13	0.00	0.0
SMED	65.50	30.50	Shared Medical Systems	62.00	0.75	1.2
SHKIF	13.13	4.00	SHL Systemhouse	12.63	0.00	0.0
SSPS	26.50	14.00	Software Spectrum Inc.	19.63	0.38	1.9
SNDT	33.75	17.75	SunGard Data Systems	28.00	-1.75	-5.8

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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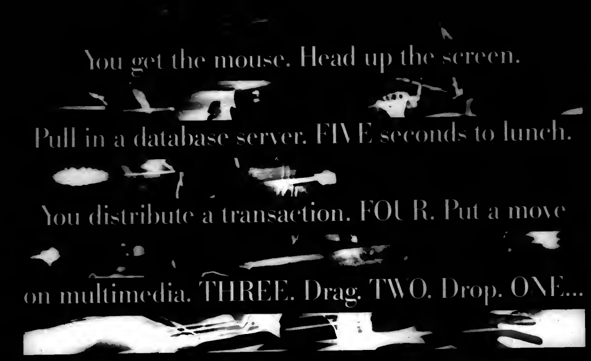
You get the mouse. Head up the screen.
Pull in a database server. FIVE seconds to lunch.
You distribute a transaction. FOUR. Put a move
on multimedia. THREE. Drag. TWO. Drop. ONE...

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Microsoft

CONTINUED FROM COVER 1

for Java are relatively inexpensive, Microsoft has instead tried to position its OLE controls technology, called OCX, as a direct competitor to Java.

Netscape Communications Corp. and Spyglass, Inc. have announced plans to support Java in upcoming releases of their popular browsers. But while Microsoft's browser is a hybrid based on Spyglass', the company still won't commit to supporting Java.

Java "is a really simple way to write applications for Unix, Mac or whatever," said Art McAnarney, a senior programmer/analyst at Lockheed Martin Corp. The defense contractor in Littleton, Colo., bought an unlimited-user license for Netscape's Navigator and expects to install it on 80,000 user desktops by year's end.

Microsoft must address the Java question soon or risk losing potential customers, said Dave Garaffa, who runs BrowserWatch, a Web site that monitors the browser market.

Still, many observers agreed that this week's Internet strategy briefing will produce at least the appearance that Microsoft will soon be a big presence on the 'net. Products and technologies to be shown, according to executives and sources at Microsoft, include the following:

- Early versions of Office 96 applications that will provide Internet integration features, such as conferencing over the Internet.
- The Exchange messaging server, which entered release candidate stage (the phase right before commercial release) on Dec. 1. Exchange Server, the electronic-mail engine that will be the cornerstone of Microsoft's future groupware strategy, will bundle in a Simple Mail Transfer Protocol (SMTP) Internet Connector, which enables users of mail clients that support SMTP mail to send E-mail to the server.
- The Internet Information Server (IIS), code-named Gibraltar, which just entered beta testing. The IIS will also feature a new application programming interface (API) jointly developed with Process Software Corp. Called the Internet Server API, or ISAPI, it was designed to simplify the task of writing applications to run on the IIS.
- Internet Explorer 2.0, the company's new browser that became available in final form last week on Microsoft's home page on the World Wide Web.
- Extensions to Visual Basic to support ISAPI, probably early next year. These will enable users to write applications quickly, sources said.
- Extensions to Microsoft's OLE technology and OCXs to enable them to work over the Internet.

Web dogfight

Web server	Platforms supported	Availability Price
Microsoft's Internet Information Server Redmond, Wash. http://www.microsoft.com	Windows NT	Q1 1996/ Not yet set
Netscape's Communications Server Mountain View, Calif. http://www.netscape.com	Windows NT Unix	Now/ $795
Oracle's WebServer Redwood Shores, Calif. http://www.oracle.com	Unix	Q1 1996/ Not yet set
Process Software's Purveyor Framingham, Mass. http://www.process.com	Windows NT, Windows 95 Open VMS	Now/$495 (Windows NT) $295 (Windows 95) $1,195 (OpenVMS)

MCA/Universal Studios, First Chicago and the N.Y. Public Library hit the 'net. See page 70.

Lawsuit

CONTINUED FROM COVER 1

In its lawsuit against System Software Associates, Owens-Illinois claims there were significant gaps between how the vendor's BPCS software was supposed to work and how it actually worked. Owens-Illinois charges that BPCS:

- *Would not function in the distributed processing environment*
- *Would not generate consolidated reports at all levels*
- *Would not integrate with fax and E-mail software to send spooled print forms and reports*
- *Would not support E-mail interface and triggering capability, including broadcast functionality*
- *Would not perform date and time stamp processing on all system records*

have traditionally shunned Wall Street analysts, are suddenly calling on them to attend a hastily arranged meeting with Unix customers. The meeting will be held next week in Chicago.

On the industry analyst front, Judith Hurwitz, president of Hurwitz Consulting Group, Inc. in Newton, Mass., is warning her clients "to stay away from SSA for a while."

"I am quite concerned, with what I've seen from customers, in SSA's ability to implement their new version of software in a timely manner," Hurwitz said last week.

Gartner Group, Inc. placed a similar hold on SSA software in February, noting that the vendor at that time was "stumbling" in its development of a Unix version of its flagship manufacturing software for the IBM AS/400.

Now, however, "we believe they actually have systems that users can look at and that are reliable," said Eric Keller, an analyst at Gartner Group, a software research firm in Stamford, Conn.

The lawsuit against SSA stems from Owens-Illinois' purchase of SSA's Business Planning and Control System (BPCS) software.

Owens-Illinois claims that SSA consistently misrepresented the software's capabilities in sales presentations and even after Owens-Illinois purchased the manufacturing applications (see chart).

The lawsuit also states that SSA misrepresented its plans and timetable for delivering a version of BPCS that would work on Sybase databases, which Owens-Illinois uses. Larry Ford, former CEO of SSA, told Owens-Illinois executives that a Sybase version would be ready in November 1994, according to the lawsuit. The BPCS software runs on databases from Informix Corp. and Oracle Corp.

Covey last week said SSA developers are still working on a Sybase System 11 version of BPCS, but he couldn't offer a release date.

Covey also noted that the contract with Owens-Illinois was for AS/400 software. The contract stated only that SSA would make a "best effort" to deliver a Sybase version to the company, he said.

Several SSA users contacted last week discussed some concerns they have regarding SSA's Unix software, but they spoke on the condition of anonymity.

"We purchased the [Unix] product on faith," said the vice president of information systems at a $1 billion manufacturing company in New England.

"What was really demonstrated to us was more of [SSA's] object technology direction, which is consistent with the direction we want to head in," the executive said. Consequently, he added, "it's too soon to say they've delivered."

Microsoft's internal rollout of Exchange is behind schedule. See page 57.

Java

CONTINUED FROM COVER 1

veloper products group at SunSoft, Inc.

The goal was to create a more graphical, flexible interface — similar to OLE's drag-and-drop capabilities — added Mike Homer, director of marketing at Netscape in Mountain View, Calif.

In the opposite corner is Microsoft's OLE technology and a breed of self-contained OLE control objects that users can activate by dragging and dropping into applications.

While there are hundreds of OLE controls available today, they can be used only on a single PC. Microsoft is expected to address that limitation next year with Internet extensions for its OLE controls technology, called OCX.

Netscape and Sun are racing to beat Microsoft to the Internet object punch: Also part of today's announcement will be plans to ship a server version of Java Script early next year, Homer said.

That would give users more flexibility to decide which parts of their Web applications will reside on clients or servers. Currently, only Netscape's client-side Web browser, Navigator, supports any form of Java.

Despite Microsoft's plans to tweak OLE for cyberspace, the vendor might be better off as a joiner rather than a fighter, users and analysts agreed last week.

"They positively have to put Java [support] into" their browser, said Michael A. Goulde, a senior consultant at Patricia Seybold Group in Boston. "What they should target is interoperability between Java applets and OCXs ... but the question is: 'Is Microsoft willing to play the open systems game?'"

Although it is available only in a beta-test version, Java already is too big to ignore, said Ben Narasin, president of Internet Design Group, a Web consulting firm in New York. Narasin said he won't hire a webmaster who lacks the penchant for experimenting with Java.

Webmasters must "adapt to tomorrow's new technology," he said. "Java is very much in that picture."

More than 100,000 copies of Java have been downloaded from the Internet so far, according to Sun estimates.

Furthermore, Netscape's plan to support Java applets in the next version of its popular Navigator browser — Version 2.0 — could catapult Java to stardom, said Rick Villars, an analyst at International Data Corp. in Framingham, Mass.

Still, the triumph of either Java or OLE is far from a done deal. Several Internet development tools from less prominent vendors have been available for months, including products from Bluestone Software Corp. in Mt. Laurel, N.J., Macromedia, Inc. in San Francisco and Spider Technologies, Inc. in Palo Alto, Calif.

Tom Button, director of marketing for Microsoft's Developer Division, said the company is committed to helping its 4.5 million developers get on to the Internet. "All of Microsoft's developer tools, including [the] BlackBird [Web authoring tool], will support OLE and OCXs," he said.

Currently in beta, BlackBird 1.0 supports OLE and OCXs but works only with The Microsoft Network, Button noted. But it is being modified to work with the Web, and company executives have said that support will be available in the first quarter of 1996.

DELL

Retailers rely on IS to meet holiday rush

CONTINUED FROM COVER 1

chase during the Barneys' annual winter sale, which started the day after Thanksgiving.

Some 82% of the New York retailer's customers use credit cards, which the store scans to add to its database of 500,000 customers.

Despite the crowded stores, *holiday spending is sluggish this year, and retailers are turning to IS for help with decision-support and target-marketing systems*

Across the board, retailers are grappling with a variety of challenges this holiday season. Skyrocketing paper and postage costs are forcing stores and catalog companies to be more conservative and target their direct mailings carefully.

And consumers are less willing to part with their money this year.

Although mall revenue was up 5.8% on the day after Thanksgiving, compared with the same day last year, it was well below the 9% increase retailers enjoyed last year over 1993, according to the International Council of Shopping Centers.

With consumer spending down, stores must make it a higher priority to keep shelves stocked with what the customers do want. Computer technology helps there as well.

Leading-edge retailers, such as Wal-Mart Stores, Inc. and Sears, Roebuck and Co., use sophisticated, massively parallel database engines from AT&T Global Information Solutions and Teradata Corp. to help forecast which items will be in top demand, according to Thomas Friedman, editor and publisher of "Retail Systems Alert," a newsletter in Newton, Mass.

Doing their homework

At Barneys New York, the marketing campaign to draw customers in to buy Giorgio Armani suits or Donna Karan apparel begins in September.

That is when the store begins studying patterns of customer demand using a Customer Profile System from STS Systems, Inc. that runs on a Data General Corp. Aviion 9500 eight-way processor.

The system spits out reports on its target customers and sends them mailers about the winter sale. The payoff for Barneys is staying on track to meet double-digit sales growth projections for the month of December, said Van Sullivan, vice president of men's merchandise planning.

Land's End Direct Merchants, Inc. in Dodgeville, Wis., performs regression analysis on customer orders to determine trends in buying.

The company has 20 different catalogs for specialty markets such as men's clothing, children's wear and housewares.

20 million names

To maximize sales, Land's End looks to decision-support software to determine when to send which catalog to which people in its customer database — and even when to mail the catalog so it arrives when the customer is most ready to buy.

"We have 20 million names in our customer database. If we just sent out catalogs to saturate those 20 million names, we'd go bankrupt quickly," said Dan Rourke, vice president of information services at the company.

Sweet scent of outsourcing

Other retail outfits have looked to outsourcing to help them segment their customer information.

The catalog division at Caswell-Massey Co., for example, is outsourcing its customer database development and segmentation operations to Anchor Computer, Inc. in Farmingdale, N.Y.

"I can concentrate on running the catalog division, and [Anchor] can keep up with postage regulations and what's happening in the technology field," said Jean Rettig-Carr, manager of catalog and media at Caswell-Massey.

A different kind of freeze

In most retail outfits, the day after Thanksgiving marks the beginning of the "Christmas freeze." That is the period when IS avoids making any significant systems changes to ensure stability and minimize downtime.

"The chief thing we do is avoid making discretionary changes whenever we can," said Bob Hatch, network and computing operations manager at Nordstrom, Inc. in Seattle.

At Land's End, Mondays and Tuesdays during the Christmas season are particularly busy as the catalog sales company processes orders from the weekend.

The company maintains test software on its IBM mainframe to try out new applications, but it shuts down that software at the beginning of the week to give its order-processing software access to applications.

"We want to make sure that we can take the orders and ship the orders," said Dan Rourke, vice president of information services. "Those are the most important functions we perform."

— Mitch Wagner

On-line to the rescue

Let's say you get a last minute gift for Christmas this year from Great Aunt Mabel. And while you think that hand-knitted cummerbund is just darling, you are in a panic.

You don't have a present for the grand dame — and there is no time left to shop.

Virtual Vineyards in Los Altos, Calif., is one place with a solution to offer — as long as your aunt is a wine drinker, that is.

The company, which specializes in selling fine wines and gourmet foods over the Internet, has set up a page on the 'net for sending fast, last minute gifts.

On its "Gift Packs to the Rescue" page, customers can prepare an electronic order form that specifies ahead of time the merchandise selection and billing information.

Virtual Vineyards (http://www.virtualvin.com) isn't the only company looking to fill its coffers at Christmastime this year.

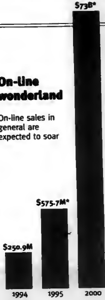
"We think this is going to be the first significant Christmas for on-line sales," said Bill Rollinson, vice president of marketing at the Internet Shopping Network (ISN) (http://www.internet.net) in Palo Alto, Calif.

The ISN sells computer equipment, software, consumer electronics, jewelry, sporting goods and other retail gear.

Last year was the first year on-line shopping made any significant impact — to the tune of $250.9 million — in consumer spending, according to on-line analysts Jupiter Communications, Inc. in New York (see chart below).

Two-thirds of those cybersales came in the fourth quarter, partly because of tradition but also due to the geometric month-to-month growth of on-line service. And while January and February are traditionally slow months in conventional retail outlets, Rollinson predicts sales will be brisk on-line. "A lot of people will get computers and Internet connections for Christmas and will want to try them out," he said.

— Mitch Wagner



On-line wonderland

On-line sales in general are expected to soar

*Projected

Source: Jupiter Communications, Inc., New York

Certain areas are expected to blast off

On-line revenue by segment	1994	2000*
Travel	$142.3M	$3.0B
Entertainment (books, magazines, music, videos)	$36.9M	$2.6B
Grocery and drug stores	$30.8M	[illegible]
Computer software/CD-ROM	$17M	$392M
Computer hardware/consumer electronics	$17M	$341.7M
Event ticketing (concerts, sports, movies)	$5.7M	$116.9M
Clothing, accessories, jewelry	$900,000	[illegible]
Other	$300,000	$4.2M

*Projected

Source: Jupiter Communications, Inc., New York

Debate rages on how to supercharge servers

· *Charles Babcock*

As NUMA vendors make their claims, ask about the difference in latencies between local and remote data access.

Around of symmetrical multiprocessor (SMP) servers now in the works will dwarf those that have gone before. The nonuniform memory access (NUMA) generation will push microprocessor-based servers from four-cylinder engines up to locomotive status.

NUMA designs are being pursued by Sequent, Pyramid, Convex and Data General. Sun Microsystems has issued a research paper on them, Silicon Graphics is believed to be working on one behind the scenes, and Compaq is probably working on one.

The idea is to scale up SMP designs beyond the 16- to 32-processor limit, at which SMP seems to be maxxed out today. Through NUMA, SMP may scale up to 128, 252 or more processors while maintaining its effective price/performance ratio. If this approach can be borne out, then SMP servers will be built that will replace general-purpose hosts and eventually inherit the role of the IBM mainframe.

But there's more to building a NUMA server than stuffing processors into a box. The processors must be interconnected, and the wait times, or latencies spawned by the interconnect, must be lower than those of clusters or the architecture loses its advantage.

"The interconnect must be an extension of main memory, not part of the I/O system," says Steve Wallach, senior vice president of technology at Convex.

The interconnect ties together all processors and memory. Through it, all forms of memory must appear to be shared in a common pool even though it exists in several different forms — CPU caches, secondary caches and main memory. The distributed locations of caches along with the different memory forms yield the nonuniform access times as a CPU makes repeated requests for data. Nevertheless, a NUMA design must maintain the appearance of a common pool to the application. Otherwise, SMP loses its advantage of simplicity in programming over parallel systems.

When the trick is pulled off, SMP becomes a scalable, general-purpose architecture with a much more promising future. As vendors pursue NUMA designs, debates are raging over what makes the best interconnect, what are tolerable latencies, how big caches should be vs. main memory and how transparent the architecture is to the programmer.

When the CPU can't retrieve data from its local cache, it must look elsewhere in the system. It must take only three to four times longer to do a remote retrieval than a local one. When it takes longer, the NUMA design begins to fail as a shared memory design, and distributed memory — message passing — designs can surpass it, says John Mashey, director of systems technology research and development at Silicon Graphics.

As NUMA vendors make claims about their architectures next year, ask about the difference in latencies between local data access and remote data access.

The remote latencies will be determined by the effectiveness of the server's CPU interconnect. This is one of the least-appreciated features of server design, and there is little agreement on what makes the best interconnect. A simple bus is unlikely to cut it because a request for data by one CPU ties up the bus.

Sequent boasts of its IQ Link interconnect on a NUMA machine, which is due out late next year. The IQ Link uses gallium arsenide "data pumps" and caches to execute high-speed retrievals at a claimed speed of 1G byte/sec., compared with Sequent's current high-end Symmetry processor, which moves data at 240M byte/sec.

Convex uses a crossbar switch on its Exemplar 1200, a NUMA design, which can open a direct path between any two processors over a matrix of connections. Pyramid plans to use its Mesh interconnect on a NUMA server to be announced in March. It currently uses the Mesh in its parallel Reliant machine. Another approach would be to implant intelligence in the form of router chips, Mashey says.

In listening to claims about NUMA, ask what intelligence is on the interconnect. Will the interconnect scale up as processors are added? Does the vendor guarantee that latencies will remain the same?

The NUMA server will soon provide less expensive processing power, but whether the early designs will live up to its promise remains to be seen.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

Inside Lines

Getting even cozier?

Rumors churned last week that Sun is talking with Netscape about buying a stake in the red-hot Internet company. Netscape and Sun officials declined to comment. Netscape spurned a buy-in offer from Microsoft early this year, then went public in August. But Wall Street values Netscape stock at more than Delta Air Lines'; can Sun afford a piece of this rock?

Virtually Cisco

Internetworking giant Cisco Systems, Inc. is expected to release a spate of virtual LAN network management offerings today. Cisco will announce a set of capabilities for VLAN Director, an application in the CiscoWorks family that displays topology maps of the entire network. VLAN Director is different from other management packages because it gives users a logical representation of the entire network and not just a physical map. Also due is Discovery Protocol, a software agent embedded in each managed device.

Not so fast

In what analysts call an unprecedented move, IBM was forced to lower performance ratings on some of its CMOS-based mainframes after live benchmarks fell short of the simulated tests done during development. Gartner Group, Inc. cut its MIPS estimates by up to 10% on the low-end multiprocessors in IBM's 9672 R line after it received word about the benchmarks. Because mainframe pricing is based on performance, the shortfall means IBM has to lower bids on the machines. Software costs also should be reduced in some cases.

Yeah, but who is it?

ATM market leader Fore Systems this week will announce the acquisition of a remote access products vendor based in California. A Fore spokesman confirmed the plan but wouldn't name the company.

The 5th Wave by Rich Tennant

"Awww jeez. I was afraid of this. Some poor kid, bored with the usual chat lines, starts looking for bigger kicks. Pretty soon they're surfin' the seedy back alleys of cyberspace and before you know, they're into a file they can't 'undo' I guess that's why they call it the Web. Somebody open a window!"

Engage Warp speed

IBM has kicked its OS/2 Warp Server beta program into overdrive. Sources close to IBM in Austin said OS/2 Warp Server is now "in its final Gamma release, and we've expanded the beta program from 12,000 to 30,000 users and are on target for early first-quarter shipments."

The road backward

It turns out the multimedia CD-ROM that comes with Microsoft Chairman Bill Gates' book on the information superhighway, *The Road Ahead*, is buggy and crashes frequently. An even bigger gaffe is that it's evidently incompatible with Windows NT, which means users of Microsoft's enterprise operating system can't take the virtual flyby tour of his new estate on the banks of Lake Washington. Would "Oops!" be a correct description of the problem?

Weep not for IBM. Its popular nickname of "Big Blue" may have been trademarked by a small PC reseller named Big Blue Products, as we reported here last week. But some concerned readers came through with possible new ones. "Beyond Blue," "Large Lavender" and "Big Blew It" all had a certain cachet. One person, noting his early working experiences with Selectric typewriters, recalled when IBM stood for "Itty Bitty Machines." Given Lou Gerstner's zeal for building a low-cost Internet terminal, maybe that moniker could apply anew. If you have other suggestions for Lou or would like to just pass along new tips to Computerworld, *call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached at (508) 820-8179 or via the Internet at maryfran_johnson@cw.com.*

Computerworld Editorial Calendar

Dec. 1995 - Feb., 1996

Issue Dates	Ad Closings Color*	B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
Dec. 4	Nov. 17	Nov. 22*	**Closer Look:** Visual Development Tools	**Client/Server World** Chicago, 12/5 - 12/7 **DB Expo** New York City, 12/5 - 12/7 Starch Study
Dec. 11	Nov. 22*	Dec. 1	**CW Guide To: Messaging Software and E-mail** With e-mail going through a major architectural change to client/server, the market will have a very different shape. IS should be able to purchase products that better address company needs. **Buyers' Satisfaction Scorecard:** Market leading e-mail software **Firing Line:** Latest e-mail package from a leading vendor	
Dec. 18	Dec. 1	Dec. 8	**Closer Look:** Contact Management Tools	
Dec. 25 - Jan. 2	Dec. 8	Dec. 15	**Annual Forecast Issue:** Choices abound for IS managers in 1996, but the budget and the workday will stretch only so far. Computerworld will draw on the expertise of users and industry figures to help the IS manager solve the mystery of where to invest in 1996. **Special Section:** Jobs Preview 1996	
Jan. 8	Dec. 15	Dec. 29	**Closer Look:** Storage Management	
Jan. 15	Dec. 29	Jan. 5	**Buyers Guide to Notebook Computers:** A look at technology directions in portable computers, tips for evaluating notebooks and an analysis of the strengths and weaknesses of leading notebook product lines.	Starch Study
Jan. 22	Jan. 5	Jan. 12	**Special Report:** The Best Computer Science and IS Schools	
Jan. 29	Jan. 12	Jan. 19	**Buyers Guide to Network Management:** How do today's network management packages meet corporate needs, and how will those products and corporate requirements evolve in tomorrow's distributed computing environment? What features should buyers look for, and how do products compare with each other?	**ComNet** Washington, DC 1/30 - 2/1
Feb.	Jan. 5		**Computerworld Client/Server Journal** **Extended Enterprise:** Integrating external information with existing applications **Product Focus:** Networking **Careers:** Team compensation	Networks Expo, UniForum Application Dev. Conf. & Expo Software Developers' Conference Database & Client/Server World AIIM
Feb. 5	Jan. 19	Jan. 26	**Special Report:** Electronic Commerce	
Feb. 12	Jan. 26	Feb. 2	**Closer Look:** OS/2 and Unix	**Networks Expo** Boston, 2/13 - 2/15 **UniForum** San Francisco, 2/14 - 2/16
Feb. 19	Feb. 2	Feb. 9	**Hot Happenings:** An IS professional's guide to upcoming conferences and trade shows.	
Feb. 26	Feb. 9	Feb. 16	**Buyers Guide to RAID:** Now accepted by corporate users as one of their primary storage vehicles, RAID is being offered at the workgroup and the enterprise levels. A look at issues such as when RAID is the best bet for an application and when it isn't. Experts share advice on how to evaluate RAID products, and offer insight into where RAID can and should go from here. **Special Supplement:** Top 25 Systems Integrators	Starch Study

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Issue Dates	Ad Closings	Custom Publications	Show Distribution & Ad Readership Study Issues
Dec. 4		**White Paper:** Service Solutions for Client/Server (part 4 of 4-part Enterprise Software Directions Series)	**Client/Server World** Chicago, 12/5 - 12/7 Starch Study
Dec. 11		**White Paper:** Manufacturing Acquisition Strategies: A Guide for User Empowerment (part 4 of 4-part Manufacturing Series)	
Feb. 5	Nov. 24	**White Paper:** Enterprise Resource Planning (part 1 of 4-part Manufacturing Directions Series)	
Feb. 26	Dec. 29	**White Paper:** Hierarchical Storage Management (part 1of 4-part Enterprise Storage Management Series)	Starch Study

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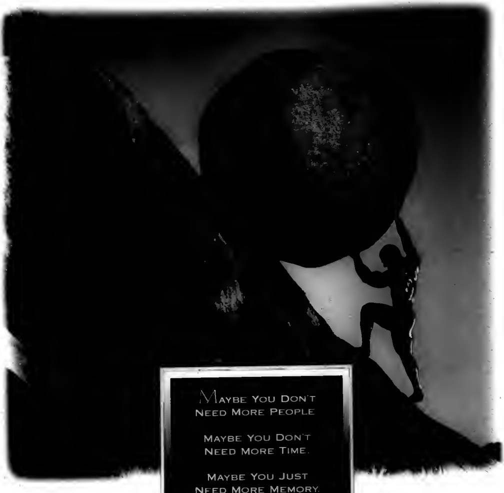

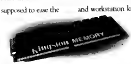
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